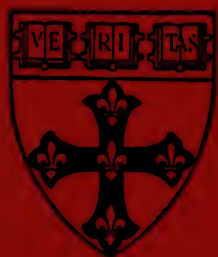


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HARVARD SCHOOL OF PUBLIC HEALTH



Courses of Instruction

1961-1962

OFFICIAL REGISTER OF
HARVARD UNIVERSITY

Volume LVIII

July 17, 1961

Number 11



THE HARVARD SCHOOL OF PUBLIC HEALTH

1961 - 62



*55 Shattuck Street
Boston, Massachusetts*

PUBLISHED BY THE UNIVERSITY • 1961

Main Building

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Section I

Introductory Information

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HARVARD COLLEGE

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Secretary to the Corporation

DAVID WASHBURN BAILEY, A.B.

BOARD OF OVERSEERS

The President and Treasurer of the University, ex officio, and the following persons by election:

1962

EDWARD STREETER, A.B.

FREDERIC BENNETT WHITMAN, A.B., M.B.A.

FREDERICK AUGUST OTTO SCHWARZ, A.B., LL.B.

STANLEY MARCUS, A.B.

THOMAS HARRISON HUNTER, A.B., B.A., M.D.

HARVARD UNIVERSITY

1963

RAYMOND SANGER WILKINS, A.B., LL.B., S.J.D. (hon.), LL.D., J.D. (hon.)
DEVEREUX COLT JOSEPHS, A.B., LL.D.
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LAURENCE EDWARD MALLINCKRODT, A.B., M.B.A.
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LITT.D.

1964

FRANCIS BOYER, LL.D.
JAMES MORISON FAULKNER, A.B., M.D., S.D. (hon.)
ALEXANDER MOSS WHITE, A.B., LL.D.
WILLIAM GURDON SALTONSTALL, A.M., L.H.D., LL.D., LITT.D.
EDWIN ALLEN LOCKE, JR., A.B.

1965

HERMON DUNLAP SMITH, A.B.
JOSEPH EDWARD LUMBARD, JR., A.B., LL.B.
RALPH JOHNSON BUNCHE, A.M., PH.D., LL.D.
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COURTLANDT SHERRINGTON GROSS, A.B., LL.D.

1966

GEORGE ABBOTT BROWNELL, A.M., LL.B.
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1967

JAMES PHINNEY BAXTER III, PH.D., LL.D., L.H.D., LITT.D., S.D. (hon.)
ROBERT FREDERICK LOEB, M.D., DR. (hon.), LL.D., S.D. (hon.)
JAMES BROWN FISK, S.B., PH.D., A.M. (hon.), S.D. (hon.)
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NATHANIEL VINING DAVIS, A.B.
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1961-62

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Member of Law Firm, Palmer, Dodge, Gardner & Bradford
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The Employers' Liability Assurance Corporation, Ltd.

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Lawyer	

SCHOOL OF PUBLIC HEALTH

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HUNTINGTON WILLIAMS, M.D. Commissioner of Health Baltimore City Health Department	Baltimore, Maryland

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<i>President:</i> NATHAN MARSH PUSEY, PH.D., LL.D., L.H.D. Office, 1 Massachusetts Hall, Cambridge.
<i>Dean:</i> JOHN CRAYTON SNYDER, A.B., M.D.
<i>Assistant Dean:</i> HUGH RODMAN LEAVELL, S.B., M.D., DR.P.H.
<i>Assistant Dean:</i> JAMES LAVERRE WHITTENBERGER, S.B., M.D., A.M. (hon.).
<i>Assistant to the Dean and Faculty Advisor for Foreign Students:</i> WILLIAM HATHAWAY FORBES, DR.PHIL., M.D.
<i>Assistant to the Dean:</i> ROGER BENHAM SPAULDING, A.B.
<i>Assistant to the Dean:</i> ROBERT PRENTICE BURDEN, S.D.
<i>Administrative Assistant to the Dean:</i> MARGARET GUSS BARNABY, A.B.
<i>Librarian, Schools of Medicine, Dental Medicine and Public Health:</i> RALPH THEODORE ESTERQUEST, A.M. Office, Building A, Harvard Medical School, 25 Shattuck Street, Boston.

HARVARD UNIVERSITY

Director, Health and Medical Care

Program for Students: DONALD ASA TUCKER, M.D.

Office, Peter Bent Brigham Hospital, 721 Huntington Avenue,
Boston.

Bursar: CHARLES CROSBY PYNE, S.B.

Office, Lehman Hall, Cambridge.

The Offices of Administration of the School of Public Health are
located at 55 Shattuck Street, Boston.

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NATHAN M. PUSEY, *President (ex officio)*

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GORDON M. FAIR

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ROBERT B. REED

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MARGARET G. BARNABY and ROGER B. SPAULDING, *Secretaries*

FACULTY OF PUBLIC HEALTH*

EMERITUS PROFESSORS

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of Industrial Medicine, Emerita.*

ERNEST EDWARD TYZZER, PH.B., A.M., M.D., S.D. (hon.), *George Fabyan
Professor of Comparative Pathology, Emeritus and Professor
of Tropical Medicine, Emeritus.*

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tics, Emeritus.*

RICHARD MASON SMITH, A.B., M.D., S.D. (hon.), *Thomas Morgan Rotch
Professor of Pediatrics, Emeritus.*

GEORGE CHEEVER SHATTUCK, A.B., M.D., A.M. (hon.), *Clinical Professor
of Tropical Medicine, Emeritus.*

* Arranged, with the exception of the Deans, in order of appointment to present rank.

SCHOOL OF PUBLIC HEALTH

- MELVILLE CONLEY WHIPPLE, A.M. (hon.), *Associate Professor of Sanitary Chemistry, Emeritus.*
- JOHN EVERETT GORDON, S.B., PH.D., M.D., A.M. (hon.), F.R.C.P. (Lond.), *Professor of Preventive Medicine and Epidemiology, Emeritus.*
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- FRANZ GOLDMANN, M.D., *Associate Professor of Medical Care, Emeritus.*
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- BERTHA SHAPLEY BURKE, A.M., *Associate Professor of Maternal and Child Nutrition, Emerita.*
- HUGO MUENCH, A.B., M.D., DR.P.H., A.M. (hon.), *Professor of Biostatistics, Emeritus.*
- DONALD LESLIE AUGUSTINE, S.B., S.D., S.D. (hon.), A.M. (hon.), *Professor of Tropical Public Health, Emeritus.*
- PHILIP DRINKER, S.B., CHEM.E., S.D. (hon.), LL.D., A.M. (hon.), *Professor of Industrial Hygiene, Emeritus.*

PROFESSORS *

- JOHN CRAYTON SNYDER, A.B., M.D., *Microbiology (Dean).*
- HUGH RODMAN LEAVELL, S.B., M.D., DR.P.H., *Public Health Practice (Assistant Dean).*
- JAMES LAVERRE WHITTENBERGER, S.B., M.D., A.M. (hon.), *Physiology (Assistant Dean).*
- GORDON MASKEW FAIR, S.B., S.M. (hon.), DR.ING. (hon.), DR. (hon.), *Sanitary Engineering.*
- FREDRICK JOHN STARE, S.M., PH.D., M.D., A.M. (hon.), *Nutrition.*
- THOMAS HUCKLE WELLER, A.B., S.M., M.D., LL.D., *Tropical Public Health.*
- HAROLD ALLEN THOMAS, JR., S.D., *Sanitary Engineering.*
- DANA LYDA FARNSWORTH, A.B., S.B., M.D., *Henry K. Oliver Professor of Hygiene and Director of University Health Services.*

* For details of title, see listing under the Department.

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ROSS ARMSTRONG MCFARLAND, A.B., PH.D., S.D. (hon.), *Physiology*.

JOHN CARRELL MORRIS, S.B., PH.D., A.M. (hon.), *Sanitary Engineering*.

LESLIE SILVERMAN, S.D., *Industrial Hygiene*.

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ROBERT VALENTINE REED, PH.D., *Biostatistics*.

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VISITING PROFESSOR

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LEONID SERGIUS SNEGIREFF, M.D., DR.P.H., *Public Health Practice*.

EDWARD STEVENSON MURRAY, A.B., M.D., M.P.H., *Microbiology*.

JANE WORCESTER, A.B., DR.P.H., *Biostatistics*.

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GERALD CAPLAN, B.SC., M.B., CH.B., D.P.M., M.D., *Public Health Practice*.

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OZZIE GORDON SIMMONS, S.B., PH.D., *Public Health Practice*.

EDWARD PARISH RADFORD, JR., M.D., *Physiology*.

SCHOOL OF PUBLIC HEALTH

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ROBERT HENRY HAMLIN, A.B., M.D., M.P.H., LL.B., *Public Health Practice*.

ALBERT DAMON, A.B., PH.D., M.D., *Epidemiology*.

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ROBERT SHIHMAN CHANG, B.SC., M.D., S.D. IN HYG., *Microbiology*.

GEORGE BARKLEY HUTCHISON, A.B., M.D., M.P.H., *Epidemiology*.

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WERNER STUMM, DR.PHIL., A.M. (hon.), *Sanitary Engineering*.

ASSOCIATE CLINICAL PROFESSORS

GEORGE FRANKLIN WILKINS, A.B., M.D., *Industrial Hygiene*.

THOMAS FEGER PUGH, M.D., M.P.H., *Epidemiology*.

LEON STERNFELD, S.B., M.D., PH.D., M.P.H., *Maternal and Child Health*.

JAMES SCOULAR MCKENZIE-POLLOCK, M.B., CH.B., D.P.H., S.M. IN HYG.,
Microbiology and Public Health Practice.

LECTURERS

WILLIAM HATHAWAY FORBES, DR.PHIL., M.D., *Physiology*.

SAMUEL BROWN KIRKWOOD, A.B., M.D., *Maternal and Child Health*.
(Absent 1961-62)

WALLACE HILL BEST, PH.D., *Public Health Practice*.

ASSISTANT PROFESSORS

STEPHEN BOURNE ANDRUS, S.B., M.D., *Nutrition*.

CHARLES EDGAR BILLINGS, S.M., *Industrial Hygiene*.

ELI CHERNIN, S.B., A.M., S.D., *Tropical Public Health*.

RICHARD DENNIS, S.M., *Industrial Hygiene*.

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MARY OCHSENHIRT AMDUR, S.B., PH.D., *Physiology*.

OSCAR WILLIAM PORTMAN, S.B., M.D., *Nutrition*.

JOSEPH JOHN VITALE, S.B., S.M., S.D. IN HYG., *Nutrition*. (Absent 1961-62)

HARVARD UNIVERSITY

EDWARD ALLEN MASON, A.B., M.D., *Public Health Practice and Maternal Child Health.*

MARJORIE ANNE CHRISTINA YOUNG, ED.M., DR.P.H., *Public Health Practice.*

HARBEN JAY BOUTOURLINE-YOUNG, M.B.,B.S., M.D., *Physiology.* (Absent 1961-62)

LOUISA PINKHAM HOWE, PH.D., *Public Health Practice.*

SYDNEY HAMILTON CROOG, PH.D., *Public Health Practice.*

NEDD ROBERT FRANK, A.B., M.D., *Physiology.*

THOMAS ELIOT FROTHINGHAM, M.D., *Tropical Public Health.*

BERNARD LOWN, S.B., M.D., *Nutrition.*

CHARLES WALCOTT, A.B., PH.D., *Sanitary Engineering.*

ASSOCIATES

ISABELLE VALADIAN, M.D., M.P.H., *Maternal and Child Health.*

MARGARET ELIZABETH DROLETTE, A.B., M.P.H., *Biostatistics.* (Absent 1961-62)

MARIA BANASIEWICZ-RODRIGUEZ, M.D., M.P.H., *Nutrition.*

ROBERT ALVAN MACCREADY, S.B., M.D., *Microbiology.*

JAMES ADDISON MCCOMB, D.V.M., *Microbiology.*

BELLENDEN RAND HUTCHESON, S.B., M.D., *Public Health Practice.*

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CHIA-TUNG PAN, M.D., M.P.H., *Tropical Public Health.*

WILLIAM ALFRED BURGESS, S.M., *Industrial Hygiene*

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CHARLOTTE ELIZABETH OWENS, S.B., M.P.H., *Public Health Practice.*

THOMAS FRANZ ALFRED PLAUT, PH.D., M.P.H., *Public Health Practice.*

The names of the members of the teaching and research staff are listed in their respective departments under Content of the Courses, pages 37-80.

INTRODUCTION

The Harvard School of Public Health is one of the six privately endowed institutions in the United States which are primarily devoted to graduate education in public health. The School operates as an independent unit of Harvard University in close association with the Faculty of Arts and Sciences, the Graduate School of Education, the Medical School, the School of Dental Medicine, and the various Harvard hospitals. This introduction indicates in a general way the opportunities the School affords those students who are seeking a career in one or more of the three principal areas of public health activities: teaching, research, and administration.

Public health evolved from the early combination of medical science and engineering for the control of environmental hazards. Public health has now grown to embrace various facets of the biological, physical and social sciences as the community aspects of health problems have become more complex. In its plans for the future, the Harvard School of Public Health is principally concerned with two general kinds of problems. In the first category are the problems which have emerged as certain areas of the world have become highly urbanized and technologically advanced. Foremost among these problems are mental illness, cancer and the degenerative diseases, accidents, and the hazards of ionizing radiations. Discovery of causes and factors which modify the course of illness and injury is necessary for the development of prevention and control. Research is also needed to achieve effective administrative technics for the provision of optimum health services for entire communities.

The other general category of problems in public health derives from the fact that more than half of the people in the world reside in areas seriously afflicted by malnutrition and communicable diseases. The programs which have been successful in the technologically advanced countries often cannot be used because of basic differences in culture, geography or economic factors.

In its approach to these problems the Harvard School of Public

HARVARD UNIVERSITY

Health has as its objective the advancement of public health, both nationally and internationally. The School seeks to accomplish its objective through its activities in education and by its search for knowledge. The Faculty is equally committed to basic research in new fields and to the development of effective methods for the application of knowledge by communities or nations. The Faculty of the School and its alumni have the opportunity to play a role of major importance in the decades ahead as the profession of public health evolves in scope and content to meet the health problems of our rapidly changing societies.

The primary intent of the curriculum in the Harvard School of Public Health is to attract individuals who have the potentiality for original contributions to public health. In the selection of applicants preference will be given by the Admissions Committee to students who are capable of undertaking a course of study leading to a doctoral degree in one of the departments or disciplines of the School.

FACILITIES

Most departments of the School of Public Health are housed in two buildings in the same block: one at 55 Shattuck Street, the other at 1 Shattuck Street, Boston (15). The administrative offices are in the former building. Between the School's two buildings are the Harvard Medical and Dental Schools; the Children's Medical Center is next door, the Peter Bent Brigham Hospital is across the street and the Boston Lying-in Hospital is a block away.

The facilities of the hospitals and the adjacent institutions are available to qualified students of this School, and are used in connection with the teaching of various subjects. In addition, students enrolled at the School may take courses in other departments of Harvard University, such as in the social sciences, public administration, and medical sciences. Certain graduate courses at the Massachusetts Institute of Technology are also open to students of this School.

The Department of Sanitary Engineering of the School is also part of the Division of Engineering and Applied Physics of the Graduate School. The basic course for students of the School of

SCHOOL OF PUBLIC HEALTH

Public Health is taught here, but students may also register for courses in Sanitary Engineering given in Cambridge.

Of particular interest to students of this School is the close contact with health agencies in Massachusetts and elsewhere. The divisions of the Massachusetts Department of Public Health not only furnish opportunities for observation and training in their fields, but their staffs enter into the teaching at the School. Administrative methods at local levels may be studied at first hand in the health departments of the cities of Boston, Cambridge, Newton, Worcester and the town of Brookline.

There are two special areas for study and training purposes closely linked to the School. The Whittier Street Health Center, a district health unit of the Boston City Health Department, is used as a field for research in problems of administration and of community mental health. The other special area includes the territory covered by the Nashoba Associated Boards of Health some 30 miles from the School. It furnishes opportunities for the investigation of rural problems and administrative methods, supplementing those offered by the Whittier Street Health Center.

The Institute of Laboratories of the Massachusetts Department of Public Health is engaged in a program of general interest, attracting visitors and students from various parts of the United States and from foreign countries. It not only performs a wide variety of standard bacteriological, immunological and chemical procedures, but is actively engaged in several research programs. Its Superintendent is a member of the School's faculty. This close contact with one of the country's outstanding laboratories provides unsurpassed opportunities for qualified students who wish to obtain intensive experience in many types of laboratory methods of particular pertinence to public health.

The clinical and laboratory facilities of the Lemuel Shattuck Hospital are available to students of the School. This hospital was built by the Department of Public Health of the Commonwealth of Massachusetts for the treatment and rehabilitation of patients with chronic diseases. Since the average duration of hospitalization is much longer than that in general hospitals, an opportunity is afforded

HARVARD UNIVERSITY

to study chronic disease problems not encountered in general hospitals. The training program, consultant rounds and professional staff appointments are under the aegis of the Deans of Boston University, Harvard and Tufts University Medical Schools, as well as the Harvard School of Public Health. Research laboratories at the Shattuck Hospital are engaged in studies of arthritis, hematology, pulmonary function, radioisotopes, cancer therapy and chronic renal and hepatic diseases.

Libraries

The joint Library of the School of Public Health and the Harvard Medical School is on the second floor of the Administration Building of the Medical School. It is open from 9 a.m. until 10 p.m. on week days, from 9 a.m. until 5 p.m. on Saturdays, and from 2 p.m. until 6 p.m. on Sundays. There are at present 330,000 catalogued volumes and pamphlets, and 1,297 periodicals are received currently.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging to the University, in all of which there are more than 4,000,000 volumes and pamphlets.

The Boston Medical Library, No. 8 The Fenway, contains about 225,000 bound volumes and 160,000 pamphlets, and receives 1,050 current periodicals. This valuable library is open on week days from 9 a.m. to 5 p.m., Saturdays 9 a.m. to 1 p.m., and on Mondays and Thursdays until 9 p.m., Oct. 1 through May 31.

Students of the School also have access to the Boston Public Library.

Section II

Admission Requirements Courses of Study and Degrees

ADMISSION REQUIREMENTS

APPLICATION FOR ADMISSION

Applicants for admission to the School must submit the following material for consideration by the Committee on Admissions and Degrees: (1) completed application form; (2) transcripts of academic record at college, graduate school and/or professional school; (3) names of at least three people, well acquainted with the applicant's previous work, from whom the School may request letters of reference.

Applicants from countries in which the language of instruction is not English must satisfy the Committee on Admissions and Degrees as to their ability to speak, read, write and understand the English language competently. In order to profit from a program of graduate study, the applicant must have sufficient knowledge of English to enable him to understand lectures in English, to participate in seminar discussions and to write examinations. In the absence of sufficient evidence from the sponsoring agency and other sources, the School may request that the applicant take and pass satisfactorily the University of Michigan English Language Test. If, upon arrival at the School, a student's command of English is found to be inadequate, he may be required to take further instruction in English.

In addition to fulfilling the specific requirements for admission to the several degree programs, applicants must satisfy the Committee as to their scholastic ability and potentiality for profitable study at a graduate level. In all instances, the final judgment as to the admissibility of any applicant rests with the Committee on Admissions and Degrees.

Preference will be given to applicants under 40 years of age; applicants over 45 years of age may be considered for admission only under exceptional circumstances.

The School is unable to accept all who apply and are eligible for admission. Therefore, persons who wish to be considered for ad-

HARVARD UNIVERSITY

mission to the 1962-63 Class are urged to submit their applications by April 1, 1962. However, applications which are completed *by July 31, 1962*, will be considered, subject to availability of space.

Admission of a candidate for one academic year does not automatically admit him in a subsequent year; re-application must be considered on the candidate's own merits in the light of the particular circumstances which govern the decisions of the Committee on Admissions and Degrees.

All inquiries and communications regarding admission should be addressed to The Registrar, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

LIVING EXPENSES

Experience has shown that it is difficult for a student to get the most out of his year at the School if he has to be unduly concerned about funds to meet his expenses. Living costs in the Boston area are usually found to be higher than in most areas from which students come. Therefore, the School has adopted the policy stated below in regard to applicants for admission from outside the United States.

An applicant whose financial support is not guaranteed by an official U. S. agency or foundation must submit evidence satisfactory to the School that he will have sufficient funds available in U. S. currency to enable him to pay his expenses during the academic year. The minimum amount needed by a single person, in addition to travel, is \$3,500, to cover the cost of tuition and health fee (\$1,474) and living expenses of at least \$200 a month. If an applicant plans to bring his family, he must have at least \$500 more for each dependent in addition to travel expense. Certification of adequate financial resources must be received by the School before the immigration form needed to obtain a visa to enter the U.S. can be issued to the student.

SCHOOL OF PUBLIC HEALTH

COURSES OF STUDY AND DEGREES

MASTER OF PUBLIC HEALTH DEGREE

Requirements for Admission

1. Applicants may be considered for admission as candidates for the Master of Public Health degree if they are graduates of approved schools of medicine or if they have similarly thorough preparation in the biological sciences.

2. Persons with these qualifications must satisfy the Committee on Admissions and Degrees as to their scholastic abilities and potentiality for profitable study at a graduate level. In arriving at its decision, the Committee will give consideration to practical experience when relevant.

Requirements for the Degree

1. One academic year must be spent in residence at the University. The student must complete successfully the required and elective courses to a minimum total of 40 credit units. The basic curriculum for the Master of Public Health degree includes courses in ten areas. All candidates for the degree are required to take the following four courses, unless they can demonstrate equivalent preparation:

<i>Course</i>	<i>Credit units</i>
Biostatistics 1a,b	3.5
Epidemiology 1a,b	2.5
Public Health Practice 1a,b	3
Sanitary Engineering 1d	2.5

2. In addition they must elect a minimum of 12.5 credit units in the remaining six courses of the basic curriculum, as follows:

Ecology and Epidemiology of Infectious Diseases	<i>Credit units</i>
(Microbiology and Tropical Public Health 1a,b,c,)	6
Epidemiology of Non-infectious Disease	
(Interdepartmental Course 41c,d)	3
Environmental Hygiene 1c	2.5

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The Human Community (Interdepartmental Course 1a)	2.5
Principles Basic to the Practice of Maternal and Child Health (Maternal and Child Health 1b)	2
Public Health Nutrition (Nutrition 1a)	2.5

3. The remainder of the time will be devoted to departmental or divisional courses, seminars and tutorial work. These courses are described on pages 37-80. Courses offered by other Faculties of the University are also available.

4. No classes are scheduled during the two-week period from January 29 to February 10, 1962. This time may be used for field assignments and for tutorial and laboratory work on special projects.

5. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a term.

MASTER OF SCIENCE IN HYGIENE DEGREE (With Designation of a Field of Concentration)

This degree is granted on fulfillment of a program of advanced work in one of the basic disciplines of public health. The courses taken must form an integrated plan of study in one branch of knowledge and allied subjects.

Requirements for Admission

Applicants may be considered for admission as candidates for the Master of Science in Hygiene degree, on the basis of a one-year or a two-year program, if they meet the requirements in one of the categories listed below. They must also satisfy the Committee on Admissions and Degrees and the department within which they choose to specialize as to their potentiality for successful study at a graduate level within the School.

A. One-year Program

1. Applicants who are graduates of approved schools of medicine or who have similarly thorough preparation in the biological sciences.

SCHOOL OF PUBLIC HEALTH

2. Applicants who have a doctoral degree from an approved school in a discipline related to public health.

3. Applicants in public health specialties (social workers, nurses, health educators, nutritionists) who have obtained a master's degree with honor grades in their special fields and have had at least two years' acceptable experience in a public health activity.

4. Applicants in industrial hygiene or public health engineering who have a bachelor's degree with honor grades in physics, chemistry and engineering and who have a master's degree or equivalent graduate work with honor grades.

B. Two-year Program

1. Applicants with a bachelor's degree obtained with honors in the natural sciences who wish to specialize in one of the laboratory sciences or statistics.

2. Applicants with a bachelor's degree obtained with honors and with an adequate background in the natural sciences who wish to specialize in health education.

Under certain circumstances, a year of graduate work in another institution may be accepted as the first year of this program.

Requirements for the Degree

1. The student must spend a minimum of one year in residence at the University and must complete successfully a program of at least 40 credit units. Candidates in the two-year program must obtain at least 80 credit units.

2. All candidates for the degree are required to take Biostatistics and Epidemiology (Interdepartmental Course 40a,b,c) or, depending on their backgrounds, Biostatistics 1a,b and Epidemiology 1a,b, unless they can demonstrate equivalent preparation. The remainder of the program will be devoted to courses which may be prescribed by the department of concentration and to elective courses in the primary and related fields of interest. These courses are described on pages 37-80. Courses offered by other Faculties of the University are also available.

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3. No classes are scheduled during the two-week period from January 29 to February 10, 1962. This time may be used for field assignments and for tutorial and laboratory work on special projects.

4. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a term.

MASTER OF INDUSTRIAL HEALTH

A program of courses leading to a Master of Industrial Health degree was established in 1949, in recognition of the need for post-graduate training in the public health disciplines which are relevant to the development of health and medical programs in industry.

Requirements for Admission

Candidates for this degree must be graduates of an acceptable school of medicine and must also satisfy the Committee on Admissions and Degrees as to their scholastic abilities and potentiality for profitable study at a graduate level. Students from the United States must have completed an internship of at least twelve months in a hospital approved by the American Medical Association.

Requirements for the Degree

1. One academic year must be spent in residence at the University.
2. The student must complete successfully the required and elective courses to a minimum total of 40 credit units. All candidates for the degree are expected to take the following courses unless they can demonstrate equivalent preparation:

<i>Course</i>	<i>Credit units</i>
Biostatistics 1a,b	3.5
Epidemiology 1a,b	2.5
Sanitary Engineering 1d	2.5
Environmental Hygiene 2a,b (Radiological Hygiene)	3
Environmental Hygiene 7d (Occupational Medicine)	2

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Industrial Hygiene 1c,d (Basic Problems in Occupational Health and Industrial Environments)	7
Industrial Hygiene 2a,b (Industrial Air Analysis)	4
	<hr/>
Total	24.5

In addition, the student may select from the general curriculum courses of interest to him, or do special work subject to approval of the Heads of the Departments of Industrial Hygiene or Physiology.

3. No classes are scheduled during the two-week period from January 29 to February 10, 1962. This time may be used for field assignments and for tutorial and laboratory work on special projects.

4. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a term.

DOCTOR OF PUBLIC HEALTH

For the degree of Doctor of Public Health the student must complete an approved program of independent and original investigation in a special field and must present the results of this research in an acceptable thesis.

Requirements for Admission

1. An applicant for admission to candidacy for this degree must be either (a) a graduate of an approved school of medicine, dental medicine or veterinary medicine, or (b) the holder of another doctoral degree in one of the basic sciences related to public health. In exceptional cases, an individual lacking a previous doctoral degree may be admitted if he has displayed outstanding ability in previous academic work and in practical public health experience.

2. The applicant must hold the degree of Master of Public Health or its equivalent from a recognized institution and must have demonstrated potential ability to undertake original investigation in a special field.

3. Admission to doctoral candidacy is considered provisional until the candidate has passed the oral qualifying examination.

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DOCTOR OF SCIENCE IN HYGIENE

(With Designation of a Field of Concentration)

This degree is granted on successful completion of a program of independent and original research in one of the basic disciplines of public health, and the presentation of this research in an acceptable thesis.

Requirements for Admission

Candidates for the degree of Doctor of Science in Hygiene must hold the degree of Master of Science in Hygiene or its equivalent and must indicate ability to undertake original investigation in a special field.

Admission to doctoral candidacy is considered provisional until the candidate has passed the oral qualifying examination.

REQUIREMENTS FOR DOCTORAL DEGREES

1. Residence

The student is required to complete a minimum of one academic year in residence. However, the required work and preparation of an acceptable thesis normally requires two full years and frequently longer.

2. Doctoral Program Advisor

After the student enrolls in the School as a provisional doctoral candidate, a Doctoral Program Advisor is appointed by the Department of concentration. This Advisor will keep the student informed of all procedures and requirements for the degree, will advise him about proper courses to be taken, will decide, together with the Department, when the student is prepared to take the qualifying examination, and will supervise the thesis work.

3. Foreign Language Requirement

The candidate must possess a reading knowledge of two languages, other than English, which will enable him to make use of the foreign literature pertinent to his professional interests, including his thesis

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subject. One of the languages must be French, German or Russian; the second may be another of these three languages or an additional one selected with the consent of the Department of concentration and the Committee on Admissions and Degrees. For a foreign student one of the languages may be his native tongue, subject to the approval of the Committee on Admissions and Degrees. One language examination must be passed before the candidate is permitted to take the qualifying examination. The second language examination must be passed before the appointment of the Readers of the Thesis. The candidate is urged to satisfy the language requirements as early as possible.

4. Qualifying Examination

When the Advisor and the Department judge that the candidate is prepared, an oral qualifying examination is conducted by Special Examiners, who examine in depth in the area of the candidate's general academic knowledge, his major interest, and related fields. This examination should be taken within six months, but no later than one year, after admission as a provisional doctoral candidate.

5. Evaluation of Candidate's Progress

After the candidate has passed the qualifying examination, two Faculty members are appointed to aid the Advisor in the periodic evaluation of the student's progress.

6. Deadline Dates for Thesis

After the Advisor and Department deem the thesis completed, it shall be typed in final form. Three unbound copies must be deposited in the Dean's Office *before January first*, for degrees to be awarded at midyear, and *before April fifteenth* for degrees to be awarded in June. The thesis must be accompanied by 100 copies of a summary not exceeding 1200 words in length, which shall indicate clearly the purpose, methods, and results of the investigation.

7. Acceptance of the Thesis and Final Examination

When the thesis is submitted, three Readers will be appointed to

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determine if it is acceptable. If it is approved, a final examination will be given at which the student will defend his thesis before members of the Faculty, including the Readers. Ordinarily, the thesis must be approved within five years of the date of the qualifying examination.

A detailed statement of procedures and requirements for the doctoral program and for the preparation of the thesis may be obtained from the Registrar after the student has been admitted to provisional candidacy for the degree.

SPECIAL STUDENTS

Subject to availability of space, the School may accept a few students, on a full-time or a part-time basis, who are not degree candidates, but who are interested in taking one or more courses in a special field. Procedures and requirements for the admission of such students are the same as for degree candidates. Special students who later wish to be admitted to degree candidacy will be considered on the same basis as other applicants for admission. Admission as a special student carries with it no commitment to accept the applicant as a degree candidate.

DEGREES IN ENGINEERING

Graduates of engineering colleges or scientific schools of recognized standing who are interested in the environmental engineering aspects of public health may be admitted to the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences as candidates for the degree of Master of Science, Master of Arts, Master of Engineering or Doctor of Philosophy. They may elect appropriate courses in the School of Public Health as a part of the program for these degrees.

For further information write to the Committee on Admissions, Graduate School of Arts and Sciences, 471 Broadway, Cambridge 38, Massachusetts.

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GRADING SYSTEM

The grading system in effect at the School of Public Health is as follows: A and B are honor grades; C is acceptable; D is passing but of inferior quality; F is failing.

A student cannot qualify for a degree if he fails one or more required courses. However, if he fails only one required course, he may request a re-examination in that course. Re-examination will be given subject to approval of the instructor in the course and of the Committee on Admissions and Degrees, and will normally be given only after a period of additional study or course work, within a period of eight weeks following the initial failure.

A grade recorded as "Incomplete" will be changed to "F" if the course requirements are not satisfactorily fulfilled by the end of the next period or before the comprehensive examination, whichever comes first.

A student must have at least 40 units of course credits to be eligible for the comprehensive examination. If the student fails the comprehensive examination he may request a re-examination. If the request is approved by the Committee on Admissions and Degrees, the re-examination may be taken within a period of one year.

Section III
Content of Courses

CONTENT OF COURSES

INTERDEPARTMENTAL COURSES

Interdepartmental Course, 1a. The Human Community

Lectures and seminars. *Mondays and Fridays, 11-1, Wednesdays, 10-11, first period.* Dr. PAUL, Dr. REED and associates.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

Comprehension of health problems and implementation of health programs depend upon understanding the forms and forces active in community life. This course of instruction deals with demography, social and cultural characteristics of human populations, the organization and behavior of human communities, and their relationship to the environment. The objective of the course is to provide a knowledge of, and a set of concepts dealing with, human populations, interpersonal relationships, cultural values, and social organization, in preparation for the study of public health.

Interdepartmental Course 3b. History and Philosophy of Public Health

Seminars. *Wednesdays, 2-4, second period.* Dr. MAYER and Visiting Lecturers.

Credit 1 unit.

Students will be helped to gain a broad picture of the development of medical sciences, sanitary engineering and demography in Ancient Egypt, Greece and Alexandria, Rome, the Arab and European Middle Ages and during the Renaissance and the Modern Era. This will be followed by discussion of selected historical situations illustrating how available knowledge interacts with political structure, economic status and cultural attitudes to determine the goals of public health and the execution of programs.

Interdepartmental Course 4c,d. Research Methods in Community Health

Lectures and discussions. *Mondays and Fridays, 11-1, third and fourth periods.* Dr. REED, Dr. LEVINE and associates.

Credit 4 units.

The elective course, offered by members of the Biostatistics and Public Health Practice Departments, is intended primarily for doctoral candidates and other advanced students who require specialized preparation to conduct or

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administer scientific research on social and community aspects of health, health behavior and health organization. The merits of alternative research designs will be covered by means of lectures, discussions of current research projects, and presentations of students' own research plans. Instruction will cover a range of methods and techniques including survey methods, case and longitudinal studies, as well as relevant statistical techniques, methods of constructing and administering interviews, and other methods of data collection and analysis. Admission is limited and requires the consent of the instructors.

Interdepartmental Course 40a,b,c. Biostatistics and Epidemiology

Lectures, discussions and laboratory. *Tuesdays, Thursdays and Saturdays, 9-11, first, second, and third periods.* Dr. WORCESTER, Dr. BELL, Dr. MACMAHON and associates.

Credit 7 units.

Required of Master of Science in Hygiene candidates (except those eligible to take Biostatistics 1a,b and Epidemiology 1a,b).

Epidemiology and biostatistics are two disciplines essential to the investigations of problems of health and disease at a community level. This course is an attempt to provide integrated teaching in these two subjects to a small group of students without medical background. Biostatistics, demography and epidemiology will be presented. There will be sessions devoted to the medical and biological sciences (e.g. immunology and genetics). A small number of diseases will be covered in detail to show the methods by which our present level of knowledge has been reached and to illustrate the principles of epidemiology. There will be laboratory exercises and demonstrations. Classic, as well as current, literature in epidemiology will be assigned.

Interdepartmental Course 41c,d. Epidemiology of Non-Infectious Disease

Lectures. *Wednesdays, 9-10, Saturdays, 11-1, third period; Mondays and Wednesdays, 9-11, fourth period.* Dr. MACMAHON and associates.

Credit 3 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

A course concerned with the etiology of those diseases not at present known to be associated with infectious agents. Special attention is given to the mental disorders, to the degenerative and neoplastic diseases, and to the methodologic difficulties associated with the epidemiologic investigation of chronic diseases. Through illustrative studies, problems such as the establishment of criteria for definition, the description of disease course, and the investigation of causal rela-

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tionships extending over long time periods are discussed. Systematic reviews of the present state of knowledge regarding certain disease states are presented.

Interdepartmental Course 42a,b,c,d. Seminar in Preventive Medicine and Public Health

Seminars. Time to be arranged in all four periods, and individual tutorial work. Dr. TAYLOR and Dr. McKENZIE-POLLOCK.

Credit 5 units.

These seminars are designed for the students who are preparing for careers as teachers of preventive medicine and public health. Consideration is given to the subject matter of preventive medicine and public health as they are taught in various parts of the world. Case presentations of the preventive aspects of health problems in individual patients, families and communities are discussed. Tutorial work focusses on improving teaching methods. Visiting specialists lead seminars on the prevention of specific diseases and on particular phases of teaching in preventive medicine and public health.

DIVISION OF ENVIRONMENTAL HYGIENE

JAMES L. WHITTENBERGER, S.B., M.D., A.M. (hon.), *Head of the Division*

The Division includes the Departments of Industrial Hygiene, Physiology and Sanitary Engineering. The names and titles of the Faculty and Staff members of the Division, and the courses available, are listed in the respective departments.

DIVISIONAL COURSES

Environmental Hygiene 1c

Lectures, demonstrations, and field trips. *Mondays, 9-11, Tuesdays and Thursdays, 11-1, third period.* Dr. FERRIS and associates.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

Physiologic responses evoked by the physical and chemical attributes of man's environment will be described and the limits of such responses emphasized. Methods for assessing and controlling environmental stresses will be presented. Topics covered will include: temperature, humidity, barometric pressure, ionizing radiation, air pollution, toxicology, illumination, and noise.

This course is intended for Master of Public Health candidates who are

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not specializing in Industrial Hygiene or Occupational Medicine. It is also open to other students who have had Physiology 1a,b or its equivalent and who have had chemistry and physics at a college level.

Environmental Hygiene 2a,b, 2c,d. Radiological Hygiene

Lectures, laboratories and field trips. *Tuesdays, 12-1, Wednesdays, 2-5, first and second periods; Mondays, 2-5, Wednesdays, 9-10, third period; Tuesdays, 9-11, Fridays, 2:30-5:30, fourth period.* — and staff of the Division.

Credit 3 units for each term.

The first term of the course, which may be taken separately, will present the essentials of atomic and radiation physics as an introduction to the evaluation of health hazards from ionizing radiation. Students with adequate background in physics and mathematics may be excused from the lecture portion of this term. Credit for the laboratory alone is 1.5 units.

The second term of the course deals with more advanced radioactivity instrumentation and measurement. Typical examples of bio-assays and radiation dosage measurement will be studied. During the fourth period the laboratory exercises will be held in conjunction with Physiology 40d.

Environmental Hygiene 3a,b and 3c,d. Occupational Medical Clinics

Clinics, Peter Bent Brigham Hospital, *Saturdays, 10-12, first and second periods.* Dr. MILLER.

Clinics, Lemuel Shattuck Hospital, *Thursdays, 3-5, third and fourth periods.* Dr. TYLER.

Credit 1 unit for each clinic series.

Occupational Medical Clinics at teaching hospitals will be offered in all four periods. The clinics at the Peter Bent Brigham Hospital and the Lemuel Shattuck Hospital will emphasize the effect that non-occupational disease may have on the working capacity of the individual.

The clinics are limited to physicians.

Environmental Hygiene 4c,d. Occupational Medical Clinics

Clinics, Massachusetts General Hospital, *Tuesdays, 3-5, third and fourth periods.* Dr. HARDY.

Credit 1 unit.

These clinics are concerned with diseases due to occupation, such as silicosis, beryllium intoxication, coal miner's pneumoconiosis, lead poisoning, etc.

The clinics are limited to physicians.

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Environmental Hygiene 5a,b,c,d. Aviation Health and Safety

Seminars. *Wednesdays, 11-1, in all four periods.* Dr. McFARLAND.

Credit 1 unit each period.

The purpose of these seminars is to integrate the work in the basic courses of public health and preventive medicine with the specialized problems of aviation health and safety. A series of round table discussions is arranged throughout the year, led by the students, the instructor, and various biological and medical specialists in the University.

Admission is by permission of the instructor.

Environmental Hygiene 6c,d. Human Factors in Occupational Adjustment and Safety

Lectures and demonstrations. *Fridays, 9-11, third and fourth periods.* Dr. McFARLAND.

Credit 2 units.

This course is concerned with the technics of experimental psychology, anthropology and biotechnology as applied to problems of occupational health and safety. Matching of mental and physical abilities to job requirements and the importance of designing equipment in terms of human capacities and limitation are discussed. Occupational implications of fatigue, environmental stresses, aging and the psycho-social environment are included along with an epidemiological analysis of the control of accidents.

Environmental Hygiene 7d. Occupational Medicine

Lectures. *Tuesdays and Thursdays, 9-11, fourth period.* Dr. FERRIS and Dr. WILKINS.

Credit 2 units.

The topics in this course will include the administration and organization of occupational medical departments, physical examinations, rehabilitation, and counselling.

Environmental Hygiene 8d. Community Air Pollution

Lectures, demonstrations and seminars. *Wednesdays, 11-1, fourth period.* Staff of the Division.

Credit 1 unit.

An advanced lecture and seminar course for students in industrial hygiene, sanitary engineering and environmental physiology. It will cover micro-meteorology and its relation to air pollution, aero-allergens, community air pollution control and appraisal, and solid waste disposal by incineration.

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DEPARTMENT OF INDUSTRIAL HYGIENE

LESLIE SILVERMAN, S.D., *Professor of Engineering in Environmental Hygiene and Head of the Department*

CHARLES R. WILLIAMS, PH.D., *Associate Professor of Applied Industrial Hygiene*

GEORGE F. WILKINS, A.B., M.D., *Associate Clinical Professor of Occupational Medicine*

RICHARD DENNIS, S.M., *Assistant Professor of Industrial Hygiene*

CHARLES E. BILLINGS, S.M., *Assistant Professor of Industrial Hygiene*

WILLIAM A. BURGESS, S.M., *Associate in Environmental Health and Safety Engineering*

ALLEN D. BRANDT, S.D., *Visiting Lecturer on Industrial Hygiene Engineering*

NATHAN VAN HENDRICKS, S.B., CHEM.E., *Visiting Lecturer on Industrial Hygiene Engineering*

LAWRENCE S. COOKE, *Visiting Lecturer on Industrial Hygiene*

JAMES M. AUSTIN, M.A., S.D., *Visiting Lecturer on Meteorology and Air Pollution*

ROBERT A. GUSSMAN, S.B. IN MECH.ENGIN., S.M. IN I.H., *Research Associate in Industrial Hygiene Engineering*

HARRIET L. HARDY, A.B., M.D., *Lecturer on Medicine*

ALBERT O. SEELER, A.B., M.D., *Clinical Associate in Medicine*

JOSEPH M. MILLER, A.B., M.D., M.P.H., *Instructor in Medicine*

Industrial Hygiene 1c,d. Basic Problems in Occupational Health and Industrial Environments

Lectures, laboratories, demonstrations and field trips. *Mondays and Fridays, 11-1, Wednesdays, 1:30-5, third and fourth periods.* Dr. SILVERMAN, Dr. FERRIS and Dr. SEELER.

Credit 7 units.

A course of lectures, demonstrations and inspections showing the relation of working conditions to health with special reference to control of industrial hazards, and of adverse conditions of temperature and humidity, the prevention, diagnosis and treatment of industrial disability and diseases, and workmen's compensation. (This course is classified as Eng. 282.)

Industrial Hygiene 2a,b. Industrial Air Analysis

Laboratory work. *Tuesdays and Thursdays, 2-5, first and second periods.* Dr. SILVERMAN and Dr. WILLIAMS.

Credit 4 units.

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Determination and interpretation of adverse conditions found in work places of all types, such as factories and mills, and in assembly halls; methods employed in determining physical properties of the air, such as temperature, humidity, and air motion; atmospheric impurities and normal constituents of the air—gases, dusts, bacteria, and pollens; efficiencies of protective devices such as masks and respirators.

Course 2a,b (Eng. 281) is intended for public health engineers and physicians enrolled in the Industrial Health program.

Industrial Hygiene 6a,b (Engineering 280). Industrial Ventilation and Air Conditioning

Lectures and laboratories. *Fridays, 2-5, first and second periods.* Dr. SILVERMAN and Mr. BURGESS.

Credit 4 units.

Selected topics in industrial ventilation and air conditioning of interest to students in mechanical and environmental health engineering and industrial hygiene. Primarily for engineers and physical science majors.

Industrial Hygiene 7c,d (Engineering 286). Aerosol Technology

Lectures and laboratory work, at the School of Public Health. *Tuesdays and Thursdays, 2:30-5:30, third and fourth periods.* Assistant Professor BILLINGS.

Credit 4 units.

A general discussion of aerosol properties and their behavior. An advanced course for engineers interested in air pollution evaluation and control.

Prerequisite: Industrial Hygiene 2a,b.

Industrial Hygiene 8c,d (Engineering 287). Radiological Engineering

Lectures and laboratory work. Given at the School of Public Health. Time to be arranged. Assistant Professor ———.

Credit 3 units.

Advanced and applied radiation protection problem discussion; the development of radiological design criteria for operations in radiation laboratories; establishment and application of reactor safeguards standards; emergency planning and control of radioactive wastes.

Prerequisites: Physics 101, Physics 111 or Environmental Hygiene 2a,b.

Industrial Hygiene 20. Research

A limited number of qualified students will be given an opportunity to do research work in problems of industrial health including occupational disease, toxicology, air cleaning, heating, ventilating, and air conditioning, by arrangement with the Head of the Department.

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DEPARTMENT OF PHYSIOLOGY

JAMES L. WHITTENBERGER, S.B., M.D., A.M. (hon.), *James Stevens Simmons Professor of Public Health, Professor of Physiology and Head of the Department*

ROSS A. MCFARLAND, A.B., PH.D., S.D. (hon.), *Professor of Environmental Health and Safety*

JERE MEAD, S.B., M.D., *Associate Professor of Physiology*

BENJAMIN G. FERRIS, JR., A.B., M.D., *Associate Professor of Environmental Health and Safety*

EDWARD P. RADFORD, JR., M.D., *Associate Professor of Physiology*

WILLIAM H. FORBES, DR. PHIL., M.D., *Lecturer on Physiology*

MARY O. AMDUR, S.B., PH.D., *Assistant Professor of Physiology*

HARBEN J. BOUTOURLINE-YOUNG, M.B., B.S., M.D., *Assistant Professor of Physiology* (Absent 1961-62)

N. ROBERT FRANK, A.B., M.D., *Assistant Professor of Physiology*

ROLAND C. MOORE, PH.D., *Associate in Industrial Psychology*

RICHARD G. DOMEY, S.B., ED.D., *Associate in Environmental Health and Safety*

WILLEM S. FREDERIK, DR. PHIL., M.D., S.M. IN HYG., *Lecturer on Physiology*

AUSTIN F. HENSCHER, S.B., PH.D., *Visiting Lecturer on Physiology*

STANLEY J. SARNOFF, A.B., M.D., *Visiting Lecturer on Physiology*

HARRY B. MARTIN, A.B., M.D., *Research Associate in Physiology*

HOWARD W. STOUT, JR., PH.D., *Research Associate in Physical Anthropology*

JOHN M. TYLER, A.B., M.D., *Research Associate in Physiology*

HUGH D. VAN LIEW, S.M., PH.D., *Research Fellow in Physiology*

JOSEPH MILIC-EMILI, M.D., *Research Fellow in Physiology*

JOHN L. JEFFRIES, S.M., M.D., *Research Fellow in Physiology*

FRANK E. SPEIZER, A.B., M.D., *Research Fellow in Physiology*

JAMES M. TURNER, JR., S.B., M.D., *Research Fellow in Physiology*

CHARLES D. COOK, A.B., M.D., *Assistant Professor of Pediatrics*

ROBERT G. MONROE, A.B., M.D., *Research Associate in Pediatrics*

Physiology 1a,b. Human Physiology

Lectures, laboratory and demonstrations. *Tuesdays, 11-12, Thursdays, 11-1, first and second periods.* Dr. MEAD and associates.

Credit 3 units.

This course is intended for students who lack a background in physiology.

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The time will be divided approximately equally between cellular physiology, organ and organ system physiology, and function of the total organism. The purpose of the laboratory exercises will be to give the students some experience with problems of observing living systems.

Prerequisites: College courses in physics, chemistry and mathematics.

Physiology 2c. Environmental Physiology

Lectures and conferences. *Tuesdays and Thursdays, 11-12, third period.*
Dr. FORBES.

Credit 1 unit.

This course is intended for students specializing in occupational health and will take up in greater detail some of the subjects considered in Environmental Hygiene 1c.

In general students who take Environmental Hygiene 1c should not take Physiology 2c.

The course will begin with a discussion of natural and artificial environments with particular reference to industrial workers. It will then take up human tolerance of high and low temperatures, physical fitness and its measurement, muscular work and the efficiency of various types of muscular work in industry, fatigue, and the effects of age.

Master of Science in Hygiene candidates who wish to take this course must have had Physiology 1a,b or the equivalent.

Physiology 3d. Toxicology of Air Contaminants

Lectures and demonstrations. *Mondays and Fridays, 1:30-2:30, fourth period.* Dr. AMDUR.

Credit 1 unit.

This course is intended to present toxicological information not covered in Physiology 40c. Special emphasis will be given to compounds of interest in air pollution and to experimental methods useful in evaluating the response of animals and human subjects to such compounds.

Prerequisites: Physiology 40c or equivalent.

Physiology 17a,b,c,d. Tutorial Program

Time and credit to be arranged.

Opportunities are provided for tutorial work at a master's degree level in the fields of respiratory physiology, toxicology, environmental hygiene and occupational medicine.

Physiology 20. Research

Properly qualified students are given opportunities to work in the laboratory provided they can devote an acceptable amount of time to such work.

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Physiology 40c,40d. Toxicology and Radiation Biology

Lectures and laboratory work. *Tuesdays and Thursdays, 1:30-2:30, Fridays, 2-5, third period; Tuesdays and Thursdays, 1:30-2:30, Fridays, 2:30-5:30, fourth period.* Dr. RADFORD and Dr. AMDUR.

Credit 1.5 units in each period.

The first half of this course will present an introduction to the effects of toxic chemical agents on living organisms with particular reference to experimental techniques of assessing toxicity. Several classes of toxic agents will be studied with respect to mechanisms of action on living tissues, functional changes resulting from exposure, and methods of evaluating the damage produced.

The second half of the course will deal with the biological effects of ionizing radiation. Included will be discussion of radiation biochemistry, mutagenic properties of radiation, acute vs. chronic effects and characteristics of internal and external radiation exposure. During this period students will carry out radiobiological experiments in the laboratory.

The two parts of this course may be taken independently if desired.

Physiology 41d. Special Topics in Respiratory Physiology

Lectures. Two hours a week, time to be arranged, fourth period. Dr. MEAD and associates.

Credit 1 unit.

This course will cover special topics in respiratory physiology, according to the interests of the students. It is intended primarily for students in the aviation medicine program. Other students who are specializing in environmental hygiene may enroll with the consent of the instructor.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF SANITARY ENGINEERING

GORDON M. FAIR, S.B., S.M. (hon.), DR. ING. (hon.), DR. (hon.), *Abbott and James Lawrence Professor of Engineering, Gordon McKay Professor of Sanitary Engineering and Head of the Department*

HAROLD A. THOMAS, JR., S.D., *Gordon McKay Professor of Civil and Sanitary Engineering*

J. CARRELL MORRIS, S.B., PH.D., A.M. (hon.), *Gordon McKay Professor of Sanitary Chemistry*

WERNER STUMM, DR. PHIL., A.M. (hon.), *Associate Professor of Applied Chemistry*

CHARLES WALCOTT, PH.D., *Assistant Professor of Applied Biology*

RALPH E. WHEELER, A.B., M.D., DR. P.H., *Lecturer on Sanitary Biology*

WILFRED B. KRABEK, S.M., *Instructor in Sanitary Biology*

ROBERT P. BURDEN, S.D., *Research Fellow in Sanitary Engineering*

Sanitary Engineering 1d. Principles of Water and Food Sanitation

Lectures and demonstrations. *Tuesdays and Thursdays, 11-1, Saturdays, 9-11, fourth period.* Professor FAIR, Professor THOMAS, Professor MORRIS, and Associate Professor STUMM. The hour from 12-1 on Thursdays is a discussion period. It is optional and carries no credit.

Credit 2.5 units.

Required of Master of Public Health and Master of Industrial Health candidates. Candidates for the degree of Master of Science in Hygiene may also elect this course.

This course endeavors to live up to its name by emphasizing some of the broad engineering principles useful in environmental control. These principles are presented in a manner appropriate to students who have no engineering background. Technics of control are discussed, but are presented as illustrations of principle, not as rule-of-thumb procedures that the student is expected to learn by rote. One or two field visits are made to show the application of principles in practice.

The objective of the course is not the conversion of the student into an engineering expert, ready to design water works, or develop milk-pasteurizing plants, but rather to prepare him to advise, to cooperate with, and to understand the people who are to do the job. It also acquaints him with the nature and extent of the sanitary problem, with what can be and has been accomplished by water and food sanitation, and with what may be expected to be accomplished in the future.

The topics considered include: water supply and purification; sewerage and sewage treatment; refuse and night soil collection and disposal; and food, milk and shellfish sanitation.

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Sanitary Engineering 2a,b. Sanitary Bacteriology

Lectures and laboratory. *Tuesdays and Thursdays, 8-9, Tuesdays, 1-2 and laboratory Tuesdays, 2-5, first and second periods.* Dr. WHEELER.

Credit 5 units.

Bacterial cytology and physiology. Quantitative bacteriology. Destruction of bacteria. Antibiosis. Immunity. Bacteriology of air, water, foods, swimming pools, soils and sewage. Viruses.

This is the same course as Engineering 274a.

Sanitary Engineering 3c,d. Sanitary Parasitology (To be omitted in 1961-62)

Lectures and laboratory. *Tuesdays and Thursdays, 8-9, Wednesdays, 1-2 and laboratory Fridays, 2-5, third and fourth periods.* Dr. WHEELER.

Credit 5 units.

Parasitology and control of diseases due to animal parasites. Sanitary entomology. Rodents and rodent control.

This is the same course as Engineering 274b.

The following courses of instruction offered in the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences are open to properly qualified students:

Engineering 270a. Water Supply and Waste-Water Disposal. Professor FAIR.

Engineering 270b. Water Purification and Waste-Water Treatment. Professor FAIR.

Engineering 271a. Sanitary Chemistry. Associate Professor STUMM.

Engineering 271b. Processes in Water and Waste Treatment. Professor MORRIS.

Engineering 272a. Water Analysis. Associate Professor STUMM.

Engineering 272b. Limnology. Associate Professor STUMM.

Engineering 273. Water Resource Engineering. Professor THOMAS.

Engineering 275. Seminar: Industrial Water and Wastes. Mr. MOORE.

Engineering 276. Advanced Techniques for Water Analysis. Associate Professor STUMM.

Engineering 277. Colloids. Associate Professor STUMM. (To be omitted in 1961-62).

Engineering 279. Sanitary Biochemistry. Professor MORRIS. (To be omitted in 1961-62).

Engineering 292a. Chemical Aspects of Nuclear Power. Professor MORRIS.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF BIOSTATISTICS

ROBERT B. REED, PH.D., *Professor of Biostatistics and Head of the Department*

JANE WORCESTER, A.B., DR.P.H., *Associate Professor of Biostatistics*

MARGARET E. DROLETTE, A.B., M.P.H., *Associate in Biostatistics (Absent 1961-62)*

PAUL M. DENSEN, A.B., S.D., *Visiting Lecturer on Biostatistics*

YVONNE M. M. BISHOP, B.A., S.M. IN HYG., *Instructor in Biostatistics*

ANTHONY F. BARTHOLOMAY, A.M., S.D. IN HYG., *Assistant Professor of Mathematical Biology*

The teaching aims of the Department may be divided very generally into three categories:

First, it is essential for workers in all branches of public health to be able to draw justified conclusions from numerical data and to base logical action on these conclusions. This applies to the administrator who must evaluate problems and the results of his activities, as well as to the epidemiologist and the research worker who must apply statistical technics to their laboratory and field problems. The required course in Biostatistics is therefore designed to give a minimum command of simple statistical methodology to all students.

Second, it is essential for field and laboratory researchers to be able to use statistical methods in planning and analyzing their experiments and problems. Elective courses are designed to provide an introduction to methodology in this area. These courses are adapted to the needs of students of this School, many of whom have broad background in biological sciences while few have extensive preparation in mathematics. A minimum of mathematical exposition is therefore included in courses intended for students in these categories. Instead the emphasis is on understanding the statistical procedures and the ability to carry out indicated analyses effectively.

Third, there is a smaller group of students particularly interested in pursuing further work along mathematical lines. Their requirements are fulfilled, on the one hand, by the provision of advanced and seminar courses in the Department; on the other by the offerings of the Department of Statistics in the Graduate School of Arts and Sciences. Students with mathematical backgrounds who are working in biology, or medical scientists with an understanding of basic mathematics, will be interested in a teaching and research program in Mathematical Biology being developed by Dr. Bartholomay at the Medical School. Properly qualified students at the School of Public Health may arrange for instruction in this area of knowledge.

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Biostatistics 1a,b. Principles of Biostatistics

Lectures and discussions. *Tuesdays and Thursdays, 11-12, first and second periods.*

Laboratory. *Mondays, 2-5, first and second periods.* Staff of the Department.

Credit 3.5 units.

Required of Master of Public Health candidates.

This course is designed for candidates with medical background or other similar thorough preparation in the biological sciences (for the introductory course for other candidates, see page 38). Lectures, discussions and laboratory exercises introduce the student to demographic concepts: the structure of the population and the use of the life table; the nature and composition of rates and their use from administrative and epidemiological points of view. The course forms an introduction to the theory of measurements and distributions, including the testing of significance of differences and the interaction of variables. Finally, the student is introduced to basic concepts of probability and association, sampling technics and construction of controlled experiments such as clinical trials.

Biostatistics 2c,d. Statistical Methods in Research

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 2-5, third and fourth periods.* Dr. REED and Dr. WORCESTER.

Credit 4 units.

This course, a continuation of Biostatistics 1a,b, introduces the student to technical statistical procedures important in problems of laboratory and field research. Topics included are further considerations of probability and correlation together with an introduction to procedures used in the planning of experiments including variance analysis, non-parametric methods, dosage response and maximum likelihood. Statistical technics introduced in advanced courses in epidemiology will be amplified and supplemented.

Prerequisites: Basic preparation in statistics and epidemiology.

Biostatistics 15a,b,c,d. Departmental Seminar

Seminars. *Wednesdays, 11-1, all four periods.* Staff of the Department.

Credit 1 unit in each period.

This course is designed to afford opportunity for the discussion of statistical problems arising in the course of the work of students or staff in this or other Departments, or outside the School. Problems of interest to other Departments may be discussed at joint meetings of the specialty seminars concerned. Some sessions of the seminar may be devoted to current literature. Development of topics will follow chiefly the lines of interest of students and of staff members.

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Biostatistics 17c,d. Tutorial Program

Time and credit to be arranged, third and fourth periods.

An opportunity for tutorial work at masters' level will be given interested students. This will involve not only work in statistical fields, but can include problems arising in the course of special programs in other departments. Schedules and credit may therefore be arranged jointly with such other departments.

Biostatistics 20. Research

Individual guided research at doctoral levels, for candidates for the Doctor of Public Health, Doctor of Science in Hygiene or other doctoral degrees. The work may be part of the program for a doctorate in this Department or may be integrated with doctoral research in others.

Biostatistics 41. Sequential Analysis (To be omitted in 1961-62)

Lectures and seminars. Dr. BARTHOLOMAY.

Credit 1 unit.

This course deals with a new approach to statistical inference, the distinguishing feature of which is that the number of observations required by such a procedure is not determined arbitrarily and in advance of the experiment. The decision to terminate an experiment depends at each stage on the results of observations previously made. Wald's Sequential Probability Ratio Tests will be introduced, as well as other types of sequential procedures. Recent applications to clinical experiments will also be discussed.

Prerequisite: Consent of instructor.

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DEPARTMENT OF EPIDEMIOLOGY

BRIAN MACMAHON, M.D., PH.D., D.P.H., S.M. IN HYG., *Professor of Epidemiology and Head of the Department*

THOMAS F. PUGH, M.D., M.P.H., *Associate Clinical Professor of Epidemiology*

ALBERT DAMON, A.B., PH.D., M.D., *Associate Professor of Epidemiology*

GEORGE B. HUTCHISON, A.B., M.D., M.P.H., *Associate Professor of Epidemiology*

CONRAD WESSELHOEFT, M.D., *Visiting Lecturer on Infectious Diseases*

ERNEST M. GRUENBERG, A.B., M.D., DR.P.H., *Visiting Lecturer on Epidemiology*

MORRIS SIEGEL, M.D., M.P.H., *Visiting Lecturer on Epidemiology*

EVA J. SALBER, M.B., CH.B., D.P.H., M.D., *Senior Research Associate in Epidemiology*

ASCHER J. SEGALL, M.D., M.P.H., *Research Associate in Epidemiology*

LOUIS WEINSTEIN, S.M., PH.D., M.D., *Lecturer on Infectious Diseases*

The program of the Department of Epidemiology has two main objectives. The first is to offer courses covering the broad field of epidemiology. These are designed primarily for the Master of Public Health curriculum. Purposes, philosophy and methods are outlined in Epidemiology 1a,b. Systematic reviews of the noncommunicable diseases are presented in Interdepartmental Course 41c,d. Epidemiology of specific infectious diseases is included in Microbiology and Tropical Public Health 1a,b,c. Epidemiology 3b, 4c,d and 5d are elective courses for students with special interests.

The second objective is to encourage original investigation in epidemiology. In the Master of Public Health curriculum, Epidemiology 15 provides an opportunity for experience in study design; facilities will also be provided to qualified students for participation in the research program of the department (Epidemiology 17).

A training program in epidemiology supported by the National Institutes of Health, U.S. Public Health Service, provides opportunities for training in epidemiology at a variety of levels (see page 97). In the selection of graduate candidates for this program, preference will be given to those intending to proceed to investigative work at the doctoral level.

Epidemiology 1a,b. Principles of Epidemiology

Lectures. *Tuesdays and Thursdays, 10-11, first period; Tuesdays, 10-11, Thursdays, 9-11, second period.* Dr. MACMAHON and associates.

Credit 2.5 units.

Required of Master of Public Health candidates.

Lectures on the principles, purposes and methods of epidemiology. Illustra-

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tion is by reference to classic epidemiologic investigations and through laboratory exercises.

Epidemiology 3b. Clinical Problems in Infectious Disease

Lectures. *Thursdays, 2-3; Clinics, Thursdays, 3:30-5, second period.* Dr. WESSELHOEFT and Dr. WEINSTEIN.

Credit 1 unit.

Problems of diagnosis, treatment and control of the common acute communicable diseases of temperate climates.

Epidemiology 4c,d. Human Heredity

Seminars and group discussions. *Fridays 2-4, third and fourth periods.* Dr. HUTCHISON.

Credit 2 units.

Lectures on the methodology of investigating problems of human heredity and on the current state of knowledge of certain specific areas in this field. Introductory lectures will review the principles of classical genetic theory with particular emphasis on theory peculiar to human genetics.

The methods for investigating family patterns of heredity, twin studies, effects of consanguinity and heterosis, gene linkage and the inheritance of continuous traits, such as height and IQ, will be presented. Students will be given problems illustrating these methods. Current knowledge of the heredity of such factors as mongolism, pyloric stenosis, and the human blood groups will be reviewed.

Epidemiology 5d. Epidemiologic Problems in Infectious Disease

Conferences, seminars, laboratory exercises. *Tuesdays and Thursdays, 9-11, fourth period.*

Credit 2 units.

A course given by the staffs of the Departments of Microbiology, Epidemiology and Tropical Public Health providing experience in solving epidemiologic problems in communicable disease.

Epidemiology 15a,b,c,d. Departmental Seminar

Seminars. *Wednesdays, 11-1, all four periods.* Staff of the Department.

Credit 1 unit in each period.

This course is for students with a major interest in epidemiology. Participants will select an epidemiologic problem in apparent need of investigation, and will prepare and present for group discussion a summary of the present status of knowledge of the problem and the design of a study directed towards advancement of present knowledge.

Admission subject to the approval of the Head of the Department.

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Epidemiology 17a,b,c,d. Introduction to Research

Participation in departmental research in close association with a staff member. Time and credit by arrangement with the Head of the Department.

Prerequisite: Epidemiology 15.

Epidemiology 20. Research

With immediate faculty guidance, doctoral candidates will initiate and carry through to completion a substantial research study which may or may not be related to on-going department research activities.

DEPARTMENT OF MATERNAL AND CHILD HEALTH

WILLIAM M. SCHMIDT, S.B., M.D., A.M. (hon.), *Professor of Maternal and Child Health and Head of the Department*

ELIZABETH P. RICE, A.B., S.M., *Associate Professor of Public Health Social Work*

LEON STERNFELD, S.B., M.D., PH.D., M.P.H., *Associate Clinical Professor of Maternal and Child Health and Health Officer of Cambridge*

SAMUEL B. KIRKWOOD, A.B., M.D., S.D. (hon.), *Lecturer on Maternal Health*
(Absent 1961-62)

EDWARD A. MASON, A.B., M.D., *Assistant Professor of Mental Health*

ISABELLE VALADIAN, M.D., M.P.H., *Associate in Child Health*

DAVID M. KAPLAN, S.M., PH.D., *Associate in Social Work*

HAROLD JACOBZINER, S.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

ARTHUR J. LESSER, A.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

PAULINE G. STITT, M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

ZELMA B. MILLER, S.B., PH.D., *Senior Research Associate in Maternal and Child Health and in Nutrition*

JACOB SCHONFIELD, PH.D., *Research Associate in Maternal and Child Health*

MIRIAM C. EKDAHL, S.B., S.M. IN S.S., *Assistant in Child Health*

SYLVIA G. KRAKOW, S.B., M.S.W., *Assistant in Social Work*

CHARLES A. JANEWAY, A.B., M.D., A.M. (hon.), *Thomas Morgan Rotch Professor of Pediatrics*

DUNCAN E. REID, S.B., M.D., A.M. (hon.), *William Lambert Richardson Professor of Obstetrics*

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CLEMENT A. SMITH, A.M., M.D., A.M. (hon.), S.D. (hon.), *Associate Professor of Pediatrics at the Boston Lying-in-Hospital*

WILLIAM BERENBERG, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

ROBERT J. HAGGERTY, A.B., M.D., *Associate in Pediatrics*

LONDON SNEDEKER, A.B., M.D., M.P.H., *Instructor in Pediatrics*

Maternal and Child Health 1b may be elected by any student.

Maternal and Child Health 2c,d and 17 are intended for students majoring in the Department, but either or both may be elected by other Master of Public Health or Master of Science in Hygiene candidates with the consent of the Head of the Department. The elective course 3c,d is designed primarily for major students, but may also be elected by others with the consent of the instructor.

A period of field study, Maternal and Child Health 30, is required of students majoring in maternal and child health. Students will be encouraged to spend two months before the beginning or after the end of the academic year on a field experience assignment to be worked out with each student.

Students who are accepted for admission and who do not have sufficient experience in maternal and child health may be required to have a period of field study before registration.

Two fellowships are available for physicians who have a major interest in maternal and child health (see page 97).

Maternal and Child Health 1b. Principles of Maternal and Child Health

Lectures. *Mondays and Fridays, 9-11, second period.* Dr. SCHMIDT and associates.

Credit 2 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

This introductory course presents a systematic review of the reproductive cycle, child growth and development, and principles which underlie programs concerned with maternal and child health and the related services of child welfare.

Maternal and Child Health 2c,d. Problems and Programs in Maternal and Child Health

Advanced Seminar. *Mondays, 4-6, Fridays, 9-11, third and fourth periods.* Dr. SCHMIDT and associates.

Credit 4 units.

Presentation and discussion of programs in maternal and child health and of services for handicapped children. Selected aspects of programs are

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examined with particular reference to the methods of administration in relation to program goals.

A sequence of lecture and discussion sessions will be given by Miss Rice on social problems and available social services for children.

Admission subject to the approval of the Head of the Department.

Maternal and Child Health 3c,d. Research Approach to Growth, Development and Health of the Child

Seminars. Two hours a week, time to be arranged, third and fourth periods. Dr. VALADIAN, Dr. REED and associates.

Credit 2 units.

This course deals with the methods for obtaining and evaluating data on child growth, development, and health, and the construction of norms. Particular attention is paid to problems involved in the study of interrelationships between various aspects of the child's progress and between the child and his background and environment.

Illustrative material from the Longitudinal Study of Child Health and Development conducted in this Department since 1930 by Dr. Harold C. Stuart, Professor *Emeritus*, as well as data from other studies in this country and abroad are used.

Admission subject to approval of instructor.

Maternal and Child Health 15a,b. Departmental Seminar

Wednesdays, 2-4, first and second periods. Staff of the Department.

Credit 2 units.

Seminars on topics of special interest in maternal and child health. Presentations by students and by staff of subjects assigned for critical review. Students' previous experience, research in progress, and current reports in the literature will be drawn upon.

Maternal and Child Health 17b,c,d. Individual Studies

Time and credit to be arranged, second, third and fourth periods.

Students majoring in Maternal and Child Health will devote time to be arranged to individual work under guidance. Each program will be arranged between the student and advisor during the fall term, and approved in advance by the Head of the Department. In general, such studies will involve a review of the literature, field study, and a paper reporting on the work done.

Maternal and Child Health 20. Research

Students at the doctoral level may undertake research in Maternal and Child Health by arrangement with the Head of the Department.

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Maternal and Child Health 30c

Field Study, January 29–February 10, 1962.

Credit 2 units.

Assignments to agencies carrying out maternal and child health programs.

The first two weeks of the spring term permit a planned period of study of the day-to-day operation of maternal and child health, crippled children's and other related services of selected official and voluntary agencies. In general, each student will study a single agency during the two-week period, will present questions to the seminar, will prepare a written report, and will discuss selected questions in the seminar. The field studies are under the tutorial guidance of the Department, with the cooperation of staff members of public health, social and other community agencies. Required for students majoring in maternal and child health.

DEPARTMENT OF MICROBIOLOGY

JOHN C. SNYDER, A.B., M.D., *Henry Pickering Walcott Professor of Microbiology and Head of the Department*

GEOFFREY EDSALL, M.D., *Professor of Applied Microbiology*

EDWARD S. MURRAY, A.B., M.D., M.P.H., *Associate Professor of Microbiology and Assistant Physician to University Health Services*

CARL E. TAYLOR, S.B., M.D., F.R.C.P. (Canada), DR.P.H., *Associate Professor of Preventive Medicine and Public Health* (Absent 1961–62)

SAMUEL D. BELL, JR., A.B., M.D., M.P.H., *Associate Professor of Microbiology*

ROBERT S. CHANG, B.SC., M.D., S.D. IN HYG., *Associate Professor of Microbiology*

JAMES S. MCKENZIE-POLLOCK, M.B., CH.B., D.P.H., S.M. IN HYG., *Associate Clinical Professor of International Health*

ROBERT A. MACCREADY, S.B., M.D., *Associate in Microbiology and Director of Diagnostic Laboratories, Department of Public Health of Massachusetts*

JAMES A. MCCOMB, D.V.M., *Associate in Public Health Immunology and Director of Biologic Laboratories, Department of Public Health of Massachusetts*

ROBERT B. PENNELL, S.M., PH.D., *Lecturer on Immunology*

HERALD R. COX, A.B., S.D., S.D. (hon.), *Visiting Lecturer on Microbiology*

RICHARD H. DAGGY, S.M., PH.D., DR.P.H., *Visiting Lecturer on Entomology*

ROBERT J. HUEBNER, M.D., *Visiting Lecturer on Microbiology*

JOHN H. HANKS, S.B., PH.D., *Visiting Lecturer on Microbiology*

CATHARINE ATWOOD, A.B., *Instructor in Public Health Bacteriology*

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NADIM A. HADDAD, B.A., M.D., M.P.H., *Research Associate in Microbiology*
(Absent 1961-62)

JOHN W. VINSON, S.B., S.D. IN HYG., *Research Associate in Microbiology*

ROGER L. NICHOLS, A.B., M.D., *Research Associate in Microbiology* (Absent
1961-62)

CLARENCE J. GAMBLE, M.D., *Research Associate in Population Studies*

JOHN B. WYON, M.B., B.CH., M.P.H., *Research Associate in Population Studies*

DOROTHY E. McCOMB, S.B., *Assistant in Microbiology*

JANE M. DRISCOLL, S.B., *Assistant in Microbiology*

LEO LEVINE, S.B., *Assistant in Microbiology*

SLAVOLJUB S. HARISIJADES, M.D., *Research Fellow in Microbiology*

The Department of Microbiology is concerned with the bacteria, rickettsiae, and viruses which cause the principal communicable diseases of public health importance. The staff members have many interests in common with the Departments of Epidemiology and Tropical Public Health. The courses in microbiology are intended primarily for students with a background in the medical and biological sciences.

The basic course, Microbiology — Tropical Public Health 1a,b,c, is designed to provide the students in the Master of Public Health program with the factual information and the principles of microbiology and parasitology which are essential to a general understanding of the field of public health.

The advanced courses of the department are planned for students whose major interests lie in some aspect of the communicable diseases. The titles and descriptions as listed below indicate the scope of the instruction offered by the department.

Students who are interested in learning research technics and in undertaking original investigation may register for Microbiology 17 during their first year, or Microbiology 20 after they have acquired technical skill in handling pathogenic microorganisms. These two courses provide the opportunity to work in close association with a member of the staff on a current research problem. Present departmental interests include the rickettsiae and certain viruses; the biological aspects of host-parasite relations, and the properties of human cells in tissue culture; and immunological problems, including statistical and field assay technics. Entomological problems of certain types are also within the scope of the research interests and facilities of the department.

Microbiology and Tropical Public Health 1a,b,c. Ecology and Epidemiology of Infectious Diseases

Lectures, seminars, conferences and laboratory exercises. *Tuesdays, Wednesdays and Thursdays, 9-10, Fridays, 2-5, first period; Tuesdays, Wednesdays*

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and Saturdays, 9-10, Fridays, 2-5, second period; Tuesdays and Thursdays, 9-11, Wednesdays, 10-11, third period. Dr. SNYDER, Dr. WELLER and staff of the two Departments.

Credit 6 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

This course is under the general direction of Drs. Snyder and Weller, with the collaboration of the staff of the Departments of Microbiology, Tropical Public Health and Epidemiology. The purpose of the course is to provide students in the Master of Public Health program with the basic knowledge of the communicable and infectious diseases, including the relevant ecologic factors which pertain directly to their prevention and control.

Microbiology and Tropical Public Health 1a,b,c is designed for students who have had most of the courses given in the first two years of medical school or their equivalent. The plan of the course includes several features which are new to the curriculum of the School: The introductory exercises provide an analysis of the present status of infectious diseases in tropical and temperate climates and the technics available for study of microorganisms and parasites, with special reference to recent methods which have opened a new era in microbiology. The course then considers the principal diseases of public health importance. The subjects are presented by etiologic agent, including protozoa, helminths, viruses, rickettsiae, spirochetes and bacteria.

Approximately two-thirds of the time will be devoted to lectures and one-third to conferences, seminar discussions, and laboratory exercises. In the laboratory the student is expected to acquire an understanding of the potentialities as well as the limitations of pertinent public health laboratory procedures.

Microbiology 2b. Current Research in Microbiology

Tuesdays, 3-5, second period. Dr. SNYDER.

Credit 1 unit.

This course is arranged for the students who are concentrating in microbiology, epidemiology or tropical public health. Important papers from current periodicals on topics of general interest are assigned to the students for presentation. These papers are reviewed critically in respect to evaluation of the experimental work, analysis of the results, organization of the manuscripts, and clarity of presentation.

The purpose of the course is to develop the ability of the students to read the literature analytically and to plan their own work and manuscripts effectively.

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Microbiology 11c. Public Health Laboratory Procedures

Lectures, seminars, and laboratory exercises. *Mondays and Fridays, 2-5, Wednesdays, 2-3, third period.* Dr. MURRAY, Dr. CHANG, Dr. BELL and Dr. MACCREADY.

Credit 2 units.

This course provides the opportunity to become familiar with the technics in use by public health laboratories for the diagnosis of the common bacterial and viral diseases. Some of the exercises are devoted to methods recently developed for the study of various microorganisms. The exercises are designed for orientation of the epidemiologist as well as the microbiologist, with particular reference to the potentialities and limitations of laboratory technics in the conduct of field investigations of communicable diseases.

Short exercises illustrate the important principles of tests in serology and bacteriology, and the students themselves inoculate embryonated eggs and animals by various routes, prepare diagnostic antigens, and perform neutralization tests and red cell agglutination tests.

Limited to fourteen students who are enrolled in Microbiology—Tropical Public Health 1a,b,c.

Microbiology 12c. Applied Immunology

Seminars and laboratory demonstrations at the Institute of Laboratories of the Massachusetts Department of Public Health. Time to be arranged, third period. Dr. EDSELL and staff of the Institute of Laboratories.

Credit 1 unit.

This course deals with the immunological principles underlying the preparation, evaluation and use of serums, vaccines and other biologic products used in public health practice. The design and interpretation of laboratory and field testing of biologic products, the estimation of their safety, and similar problems will be considered. Specific problems will be reviewed by participants in the course.

Opportunities are offered properly qualified students for original work at the Institute in problems of public health immunology with credit for Microbiology 17 or 20 to be arranged with the Head of the Department.

Microbiology 13d. Rickettsial and Viral Diseases of Public Health Importance

Lectures, laboratory exercises, and seminars. *Mondays and Fridays, 2-5, fourth period,* and four hours per week individual laboratory work. Dr. CHANG, Dr. BELL and Dr. MURRAY.

Credit 3 units.

The purpose of this course is to teach the basic principles and technics for laboratory study of certain rickettsiae and viruses which are of interest to

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public health workers. The course consists of lectures, seminars, supervised individual work, and laboratory exercises. The latter include methods for identification of representative species of rickettsiae and viruses of public health importance by the use of tissue culture, animal inoculation, and serologic technics.

The arthropods which are vectors or reservoirs of the major viral and rickettsial diseases are briefly considered at appropriate points in the exercises.

The course is planned as a basic preparation for those who will be involved in original research on rickettsiae or viruses either in the laboratory or the field.

Limited to ten students who have completed Microbiology 11c or who have had equivalent previous preparation.

Microbiology 15a,b,c,d. Seminars in Microbiology

Seminars. *Wednesdays, 11-1, all four periods.*

Credit 1 unit in each period.

Seminars on topics of special interest in microbiology. These vary from presentations by students of subjects assigned for analysis and review to reports by staff members and advanced students of research work in progress in the department.

This course is required for students majoring in microbiology.

Microbiology 17a,b,c,d. Introduction to Laboratory Research

Laboratory exercises. Time and credit to be arranged with the Department Staff.

Candidates for the Master of Public Health or Master of Science in Hygiene degrees, or full-time special students, may register for advanced laboratory work under the supervision of a member of the Department.

Microbiology 20. Research

Doctoral candidates or full-time special students who have completed the advanced courses in microbiology in the Department may undertake original investigation by arrangement with the Head of the Department.

HARVARD UNIVERSITY

DEPARTMENT OF NUTRITION

FREDRICK J. STARE, S.M., PH.D., M.D., A.M. (hon.), *Professor of Nutrition and Head of the Department*

DAVID M. HEGSTED, S.M., PH.D., *Associate Professor of Nutrition*

ROBERT P. GEYER, S.M., PH.D., *Associate Professor of Nutrition*

JEAN MAYER, B.A., PH.D., D.SC., *Associate Professor of Nutrition and Lecturer on the History of Public Health*

MARTHA F. TRULSON, S.B., M.P.H., S.D. IN HYG., *Associate Professor of Nutrition*

STEPHEN B. ANDRUS, S.B., M.D., *Assistant Professor of Pathology*

STANLEY N. GERSHOFF, A.B., S.M., PH.D., *Assistant Professor of Nutrition*

OSCAR W. PORTMAN, S.B., M.D., *Assistant Professor of Nutrition*

JOSEPH J. VITALE, S.M., S.D. IN HYG., *Assistant Professor of Nutrition* (Absent 1961-62)

BERNARD LOWN, S.B., M.D., *Assistant Professor of Medicine*

MARIA BANASIEWICZ-RODRIGUEZ, M.D., M.P.H., *Associate in Nutrition*

MADGE L. MYERS, A.B., S.M., *Instructor in Nutrition*

PENELOPE S. PECKOS, S.B., *Instructor in Nutrition*

PATRICIA A. STEFANIK, S.M., *Instructor in Nutrition*

ZELMA B. MILLER, S.B., PH.D., *Senior Research Associate in Maternal and Child Health and in Nutrition*

EDWIN L. PRIEN, A.B., A.M., M.D., *Clinical Research Associate in Nutrition*

F. RUSSELL OLSEN, A.B., *Research Associate in Nutrition*

LEONARDO SINISTERRA, M.D., S.M. IN HYG., *Research Associate in Nutrition* (Absent 1961-62)

ROBERT E. CLANCY, M.D., *Research Associate in Medicine*

OSCAR M. JANKELSON, M.D., *Research Associate in Medicine*

JOHN DI GIORGIO, S.B., PH.D., *Research Associate in Nutrition*

RORY W. CHILDERS, B.A., B.A.O., M.D., *Research Associate in Nutrition* (Absent 1961-62)

JOLANE P. SOLOMON, A.B., PH.D., *Research Associate in Nutrition*

JOSE NEUMAN, M.D., *Research Associate in Nutrition*

MOTOOMI NAKAMURU, M.D., DR.MED.SC., *Research Associate in Nutrition* (Absent 1961-62)

ETHEL J. BOWIE, S.B., *Assistant in Nutrition*

DOROTHY BRUNO, S.B., *Assistant in Nutrition*

MARIA DEL PILAR NEUMAN, PH.D., *Research Fellow in Nutrition*

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ATSUSHI IWAMOTO, M.D., PH.D., *Research Fellow in Nutrition*

ARNOLD ANTONIS, B.S.C., B.S.C. (hon.), PH.D., *Research Fellow in Nutrition*

SHERRY B. AUTOR, PH.D., *Research Fellow in Nutrition*

CHARLOTTE G. NEUMANN, M.D., M.P.H., *Research Fellow in Nutrition*

RAGHAVAN AMARASINGHAM, M.B.B.S., *Research Fellow in Nutrition*

JAMES H. SHAW, S.M., PH.D., *Associate Professor of Biological Chemistry in the School of Dental Medicine*

IRA GORE, A.B., M.D., *Associate Clinical Professor of Pathology*

WILLIAM R. WADDELL, S.B., M.D., *Assistant Clinical Professor of Surgery*

NORMAN ZAMCHECK, A.B., M.D., *Clinical Associate in Medicine*

EARL E. HELLERSTEIN, M.D., *Associate in Pathology*

DANIEL S. BERNSTEIN, M.D., *Instructor in Medicine*

JOHN A. SPARGO, M.D., *Instructor in Pediatrics*

HAROLD J. WHITE, M.D., *Instructor in Pathology*

HEDWIG E. ROSE, M.B., CH.B., *Assistant in Pediatrics*

The Department of Nutrition is concerned with basic and applied investigations in the science of nutrition in the areas of biochemistry, physiology, and pathology. Many of these are oriented toward problems of contemporary public health importance, such as cardiovascular disease, obesity, and cancer. The Department also has programs dealing with general nutritional and health problems in various countries in South America, Africa, and Asia.

In addition to the courses available in the School of Public Health, students may take graduate courses in the other Schools of Harvard University and at the Massachusetts Institute of Technology. Thus, a program leading to the Doctor of Science degree might include courses in nutrition, biochemistry, biostatistics and epidemiology, physiology, and bacteriology, as well as advanced courses in these and related fields, such as organic chemistry and biology. Appropriate programs are available for individuals whose interests lie in community nutrition rather than in laboratory nutrition and biochemistry.

Nutrition 1a. Public Health Nutrition

Lectures. *Tuesdays and Thursdays, 2-4, Fridays, 10-11, first period.*
Dr. STARE and staff of the Department.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

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This course deals with the science of nutrition and its application to problems of human nutrition. Approximately one half of the lectures are devoted to basic and clinical nutrition. Dietary requirements are considered in relation to growth, development, pregnancy, lactation and disease states. Methods for establishing and meeting nutrition requirements, especially in countries with unfavorable economic conditions, are discussed. The etiology, treatment and prevention of diseases related to nutritional factors are considered. Content also includes nutrition surveys and their evaluation, the place of the nutritionist in the public health program, and the nutritional problems of relief, rehabilitation, famine and other emergencies. The relation of production, distribution and preparation for the best use of foods is discussed, as are the problems of food enrichment, fortification and faddism.

Seminar sessions are arranged for small groups. Active student participation is expected.

Nutrition 2c,d. Advanced Topics in Nutrition

Lectures, discussions and required reading. *Wednesdays, 11-1, Fridays, 9-11, third period; Wednesdays, 11-1, fourth period.* Dr. HEGSTED, Dr. MAYER and Dr. GERSHOFF.

Credit 3 units.

The chemistry, function and metabolism of carbohydrates, fats, proteins, vitamins and essential minerals are considered in detail. Mechanisms of regulation and behavioral aspects of food and fluid intake, calorimetry, genetic factors in nutrition, comparative requirements of various species are examined.

This course is intended primarily for students majoring in nutrition but can be taken by other adequately prepared students by consent of the instructors.

Nutrition 3c,d. Laboratory Technics

Lectures and demonstrations. *Wednesdays, 3-5, third and fourth periods.* Dr. GEYER.

Credit 2 units. Additional credits can be arranged for those desiring extra laboratory instruction.

This course is a survey of methods pertinent to laboratory research. The material covered includes biophysical and chemical technics. Students participate in the preparation and presentation of such general topics as chromatography, spectroscopy, microbiological assay, manometric measurements, and purified diet technics. They are then instructed in the actual laboratory procedure pertaining to these technics.

Prerequisites: A basic course in biochemistry and consent of instructor.

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Nutrition 4d. Clinical and Pathologic Aspects of Nutritional Disease

Lectures, demonstrations and seminars. *Tuesdays 9-11, fourth period.* Dr. LOWN and Staff of the Department.

Credit 1 unit.

This course is concerned with the intermediate metabolism of various selected nutrients, with especial emphasis upon clinical aspects. The discussions will orient to the most recent advances in biochemistry and physiology.

Nutrition 5d. Nutritional Surveys

Lectures, discussions and laboratory exercises. *Thursdays, 9-11, fourth period.* Dr. TRULSON and Dr. GERSHOFF.

Credit 1 unit.

Methods of obtaining dietary information, principle of nutritional surveys; assessment of nutritional status in public health programs and clinical research are examined and discussed. Laboratory work will consist of practical exercises in evaluating diets and surveys.

Nutrition 17a,b,c,d. Individual Study

Time and credit to be arranged.

Individual work, under direction, may be arranged for students at the masters' level. This may include laboratory studies or projects in applied nutrition.

Nutrition 20. Research

Time and credit to be arranged.

Facilities are available for students at the doctoral level to do advanced work in nutrition along the lines of fundamental research or applied nutrition in public health and medicine.

Admission limited and subject to approval of the instructor.

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DEPARTMENT OF PUBLIC HEALTH PRACTICE

HUGH R. LEAVELL, S.B., M.D., DR.P.H., *Professor of Public Health Practice and Head of the Department*

ALFRED L. FRECHETTE, M.D., M.P.H., *Clinical Professor of Public Health Practice and Commissioner of Public Health, Commonwealth of Massachusetts*

LEONID S. SNEGIREFF, M.D., DR.P.H., *Associate Professor of Chronic Disease Control*

GERALD CAPLAN, B.S.C., M.B., CH.B., D.P.M., M.D., *Associate Professor of Mental Health*

BENJAMIN D. PAUL, A.B., PH.D., *Associate Professor of Social Anthropology*

OZZIE G. SIMMONS, S.B., PH.D., *Associate Professor of Social Anthropology*

ROBERT H. HAMLIN, A.B., M.D., M.P.H., LL.B., *Associate Professor of Public Health Administration*

SOL LEVINE, PH.D., *Associate Professor of Social Psychology*

JAMES S. MCKENZIE-POLLOCK, M.B., CH.B., D.P.H., S.M. IN HYG., *Associate Clinical Professor of International Health*

WALLACE H. BEST, PH.D., *Lecturer on Public Administration*

EDWARD A. MASON, A.B., M.D., *Assistant Professor of Mental Health*

MARJORIE A. C. YOUNG, ED.M., DR.P.H., *Assistant Professor of Health Education*

LOUISA P. HOWE, PH.D., *Assistant Professor of Mental Health*

SYDNEY H. CROOG, PH.D., *Assistant Professor of Sociology*

BELLENDEN R. HUTCHESON, S.B., M.D., *Associate in Mental Health*

WILLIAM A. GAMSON, PH.D., *Associate in Social Psychology*

CHARLOTTE E. OWENS, S.B., M.P.H., *Associate in Mental Health*

THOMAS F. A. PLAUT, PH.D., M.P.H., *Associate in Mental Health*

HARRY T. PHILLIPS, M.B., CH.B., D.P.H., M.D., *Lecturer on Public Health Practice*

THOMAS R. DAWBER, A.B., M.D., M.P.H., *Lecturer on Chronic Disease and Gerontology*

LEON J. TAUBENHAUS, A.B., M.D., M.P.H., *Lecturer on Public Health Practice*

SIDNEY S. LEE, S.B., M.D., DR.P.H., *Lecturer on Public Health Practice and General Director, Beth Israel Hospital*

RHONA V. RAPOPORT, B.S.C., PH.D., *Lecturer on Mental Health*

FRANK R. FRECKLETON, M.D., M.P.H., *Lecturer on Public Health Practice*

HELEN D. COHN, M.P.H., *Lecturer on Public Health Nursing*

IRWIN T. SANDERS, A.B., PH.D., *Lecturer on Sociology*

LENIN A. BALER, PH.D., S.M. IN HYG., *Lecturer on Mental Health*

SCHOOL OF PUBLIC HEALTH

- EDWARD WELLIN, PH.D., S.M. IN HYG., *Visiting Lecturer on Social Anthropology*
- ROBERT E. ARCHIBALD, M.D., C.M., M.P.H., *Instructor in Public Health Practice and Deputy Commissioner, Department of Public Health of Massachusetts*
- FRANKLYN B. AMOS, M.D., M.P.H., *Instructor in Public Health Practice*
- ELIZABETH B. WHITE, M.N., A.M., *Instructor in Public Health Nursing*
- OLIVE M. LOMBARD, B.SC., S.M. IN HYG., *Instructor in Public Health Practice*
- DONALD C. KLEIN, A.B., PH.D., *Instructor in Mental Health*
- BESSIE S. DANA, A.B. M.S.S., *Instructor in Public Health Social Work*
- AUGUSTA F. LAW, A.B., M.D., M.P.H., *Instructor in Public Health Practice*
- ELEANOR H. SMITH, A.B., M.D., M.P.H., *Instructor in Public Health Practice*
- ANN M. THOMSON, S.B., M.P.H., *Instructor in Public Health Nursing*
- MARY D. BAIN, A.B., M.D., *Instructor in Mental Health*
- SAUL COOPER, A.M., *Instructor in Mental Health*
- JOHN G. MCCORMICK, S.M., *Instructor in Health Education*
- ELIZABETH KINGSBURY CASO, S.M., *Instructor in Nutrition (Chronic Disease)*
- JOHN E. CONNERS, S.B., ED.D., *Instructor in Mental Health*
- GERALD E. CUBELLI, A.B., S.M., *Instructor in Rehabilitation*
- GEORGE T. NILSON, S.B., ED.M., M.P.H., *Instructor in Health Education*
- FRANCES H. PITTS, S.M., M.P.H., *Instructor in Health Education*
- DONALD OTTENSTEIN, S.B., M.D., *Instructor in Mental Health*
- CATHERINE M. CASEY, A.B., M.S.W., S.M. IN HYG., *Instructor in Public Health Social Work*
- DOROTHY M. MATHEWS, A.B., M.S.S., *Research Associate in Social Work*
- HOWARD E. FREEMAN, PH.D., *Research Associate in Sociology*
- JAMES E. TEELE, PH.D., *Research Associate in Sociology*
- THOMAS R. BRIGANTE, PH.D., S.M. IN HYG., *Research Associate in Mental Health*
- NORMAN A. SCOTCH, PH.D., S.M. IN HYG., *Research Associate in Anthropology*
- LILLY C. MOBERG, *Assistant in Public Health Nursing*
- RAYMOND F. WAGNER, S.M., *Assistant in Public Health Practice*
- EDNA L. SKELLEY, S.B., A.M., *Assistant in Public Health Nursing*
- PAUL E. WHITE, A.B., *Assistant in Social Anthropology*
- ROBERT L. BRAGG, M.D., M.P.H., *Research Fellow in Mental Health*
- IVOR W. BROWNE, L.R.C.P., M.R.C.S.I., D.P.M., S.M. IN HYG., *Research Fellow in Mental Health*
- SAMUEL G. MCCLELLAN, A.B., M.D., M.P.H., *Research Fellow in Mental Health*

HARVARD UNIVERSITY

CHARLES M. BRYANT, A.B., M.D., M.P.H., *Teaching Fellow in Public Health Practice*

ERICH LINDEMANN, PH.D., M.D., *Professor of Psychiatry*

SHIELDS WARREN, A.B., M.D., S.D. (hon.), LL.D., *Professor of Pathology at the New England Deaconess Hospital*

SIDNEY FARBER, S.B., M.D., *Professor of Pathology at The Children's Hospital*

DEAN A. CLARK, B.A., B.S.C., M.D., *Clinical Professor of Preventive Medicine and General Director of the Massachusetts General Hospital*

PAUL K. LOSCH, D.D.S., *Associate Professor of Pediatric Dentistry at the Children's Hospital*

JAMES M. DUNNING, A.B., D.D.S., M.P.H., *Assistant Clinical Professor of Public Health Dentistry, Harvard School of Dental Medicine and Director, Dental Health Service, University Health Services*

WILLIAM J. CURRAN, LL.M., S.M. IN HYG., *Lecturer on Law, Department of Legal Medicine, Harvard Medical School (Professor of Legal Medicine, Director, Law-Medicine Research Institute, Boston University)*

JOHN C. NEMIAH, *Associate in Psychiatry*

MARY L. INGBAR, S.B., PH.D., M.P.H., *Research Associate in the Graduate School of Public Administration*

The Department has specific objectives in the three broad areas of education, research and community service.

In *education* the Department seeks:

(a) To develop leaders in *general* administration who will be prepared to study objectively and to deal effectively with the changing administrative problems of the future. Such leaders should be competent to organize and administer programs for service, education, research or a combination of these activities.

(b) To educate leaders in the content and administration of *special* fields of public health for which the Department has particular responsibility. At present, the following fields are included: chronic disease control and gerontology, community mental health, health education, medical care administration, public health dentistry, public health law, public health nursing, public health social work, rehabilitation and social science in public health.

(c) To provide opportunities for specialists majoring in other departments of the School to develop an appreciation of the relationships between

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their own special field on the one hand, and public health as a whole and the communities in which they will work, on the other hand.

(d) To provide a background in the concepts and research methods of the social sciences for those students whose future activities will require knowledge of these fields.

In *research*, the Department seeks to stimulate and carry on research in the special fields of public health for which the Department is responsible. Included are the subject areas in which health and the social sciences have important interfaces, as well as comparative studies of administrative methods and problems in different parts of the world, with the purpose of discovering concepts of broad applicability.

In *service*, it is the Department's objective to provide consultation and community service to the extent that is consistent with the development and maintenance of a strong educational and research program.

Public Health Practice 1a,b. Basic Concepts of Public Health Practice

Seminars and lectures. *Mondays, 9-11 and Fridays, 9-10, first period; Mondays and Fridays, 11-1, second period.* Dr. LEAVELL and associates.

Credit 3 units.

Required of Master of Public Health candidates. Candidates for the degree of Master of Science in Hygiene and Master of Industrial Health may also elect this course.

The course is designed to give those who will work in organized health agencies an introduction to basic concepts in public health practice. Since this work may be in either voluntary or official agencies and at any political level (local, state, or provincial, national and international) discussions are keyed to those concepts which have broad validity in the rapidly changing context of public health wherever it is practiced.

Small seminar groups made up of students of differing experience provide forums to discuss case studies illustrating administrative problems. In a term paper, each student is expected to analyze a specific community health problem and to work out a plan for solving the problem.

Interdepartmental Course 1a, The Human Community, is recommended strongly as a course which provides essential background for understanding organization of the community and the interpersonal relations which are essential elements of public health practice everywhere.

Public Health Practice 2c,d. Organization and Administration of Medical Care

Seminars. *Fridays, 2-4, third and fourth periods.* Dr. HAMLIN.

Credit 2 units.

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An introduction to basic concepts in the organization and administration of personal health services. Among the subjects analyzed are: (a) the cost, utilization, and social implications of medical care; (b) the need and demand of the population for personal health services; (c) the number and adequacy of health personnel and facilities; (d) patterns of organizing health personnel and facilities, including group practice arrangements and regionalized hospital systems; (e) methods of meeting the costs of medical care through organized payment; (f) programs providing medical care for special groups of the population, specific diseases, and special hazards; (g) the roles of private and public agencies in financing and operating programs of medical care; and (h) comparison of medical care programs in the United States and other countries.

Major emphasis will be placed upon developing the ability of students to evaluate and apply various administrative policies for medical care programs. Seminars will involve a discussion of the content and application of assigned reading material.

Public Health Practice 3b. The Development of Personality in Health and Disease

Lectures and discussions. *Tuesdays, 2-4, second period.* Dr. MASON, Dr. CAPLAN and associates.

Credit 1 unit.

This course discusses concepts of personality structure and functioning in relation to work in the public health field. Factors which influence the development of healthy and unhealthy personality are discussed. Special attention is given to genetic, prenatal, and paranatal organic factors; to the influence of parent-child relationships; to the long term and short term effects of the psycho-social milieu of the family; and to the socio-cultural influences at work in the neighborhood and in the community. The unfolding of personality over the life span is studied, and the effects of life crises which are the reactions to hazardous environmental circumstances and to physiological changes such as pregnancy and bodily illness are analyzed. These considerations are then used as a basis for conceptualizing the etiological forces in the processes of mental health and mental ill health.

This course is introductory to Public Health Practice 9c,d.

Public Health Practice 4b,c. Control of Chronic Disease and Cancer, Gerontology and Rehabilitation

Lectures and seminars. *Thursdays, 2-4, second period; Fridays, 9-11, third period.* Dr. SNEGIREFF, Miss RICE, Mr. CUBELLI and associates.

Credit 2 units.

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This course is designed to present and discuss some of the major problems in the control of chronic disease and of cancer in all age groups. Rehabilitation is presented as an integral part of chronic disease control, and its philosophy, history, and relationship to public health are discussed.

Authorities in the various fields and program directors discuss specific phases of selected problems. The role of official and voluntary health agencies and their implementation at the community level is presented. Aging as a major medical, socio-economic, and psychological problem is reviewed. Emphasis is given to the newer methods of detection of disease, home care and nursing home care. Current research studies are considered.

Public Health Practice 5c,d. Health Education

Seminars. *Thursdays, 2-4, third and fourth periods.* DR. YOUNG.

Credit 2 units.

This is a problems discussion course focusing principally on how people learn; barriers to health education; methods used in health education; the practical, psychological, cultural and attitudinal factors to be considered in health education; and evaluation of health education efforts. Major emphasis is placed on community health programs and problems, with the school system being considered an integral and important part of the community.

Public Health Practice 6c,d. Group Dynamics

Seminars. *Thursdays, 4-6, third and fourth periods.* DR. KLEIN.

Credit 2 units.

The seminar can accommodate up to fifteen students. Priority is given to persons (e.g. administrators, those responsible for health education activities) for whom skill in working with staff and community groups is especially important.

Purposes of the seminars are: (1) to increase participants' sensitivity to phenomena occurring in face-to-face groups; (2) to provide the theoretical and conceptual framework for understanding the reasons for these phenomena; (3) to help students increase their own skills as group participants; (4) to stimulate interest in systematic observation and study of small group behavior.

The first hour of each session is devoted to a laboratory approach in which the group seeks to understand and learn from its own experiences. During the second hour relevant theoretical material and research findings are presented, sometimes supplemented by special practice or diagnostic exercises using role playing and other techniques. A selected list of readings is provided and observation of other groups is encouraged.

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Public Health Practice 7c. Principles of Supervision and Consultation

Seminars. *Wednesdays, 4-6, third period.* Miss RICE and Mrs. DANA.

Credit 1 unit.

The first half of the course is devoted to the discussion of supervision in terms of objectives, methods, and principles. The case method is employed to illustrate the application of supervisory principles to actual learning situations in the various fields of public health.

The second half of the course is concerned with the development of the basic principles of consultation through 1) an examination of the expectations of the consultee and the practices of the consultant from the point of view of the various health disciplines and 2) a consideration of the consultative methods employed in problem solving, staff development, and program planning in the health and welfare fields.

The differences between supervision and consultation are evaluated.

Public Health Practice 8d. Legal Problems of Organized Health Programs

Seminars. Mr. CURRAN. (Omitted in 1961-62)

Credit 1 unit.

The seminar is primarily designed for those who are or who may become administrators and policy-makers including health officers, nurse supervisors, medical care personnel, sanitary engineers, or other similar personnel, in public or private agencies. Seminars will include discussions on: (a) utilization of the law in implementing health programs; (b) the liability of health personnel and health organizations in the operation of their programs; (c) the development and comparison of legal and medical standards of practice, particularly how these standards on a legal basis may be used to increase and maintain the quality of health programs; (d) the preparation of health department regulations; (e) the preparation and presentation of medical evidence for hearings, court procedures, etc.; (f) the legal problems of disease control; and (g) various legal and administrative forms of health practice.

Public Health Practice 9c,d. The Control of Mental Disorders

Seminars. *Tuesdays, 2-4, third and fourth periods.* Dr. CAPLAN and associates.

Credit 2 units.

This seminar is designed to give public health workers some insight into the problems of organizing community programs for the control of the common mental disorders. The work of different community agencies designed to treat and prevent disorders such as psychoses, psychoneuroses, psychosomatic disorders, mental retardation, alcoholism, and drug addiction is reviewed. Such agencies include mental hospitals, psychiatric departments of general

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hospitals, child guidance clinics, and community mental health centers. Organizational policies of state and local official and voluntary mental health agencies are discussed, and some attention is given to problems of research and training in prevention, treatment, and rehabilitation methods, as well as to the implications of these topics for the collaboration of mental health workers and public health workers.

Public Health Practice 10c,d. Advanced Public Health Practice

Seminars and field study. *Mondays and Wednesdays, 2-4, third and fourth periods.* Dr. LEAVELL, Dr. HAMLIN, Dr. MCKENZIE-POLLOCK, Dr. YOUNG, Dr. BEST, Miss RICE, Miss COHN and associates.

Credit 4 units.

This course has two parts:

- a. Seminar discussions of problems and practice with emphasis on the administrator and the public health team with which he works in agencies of various types and on different kinds of public health programs. These discussions are planned to explore intensively concepts and broad problems of policy introduced in Public Health Practice 1a,b and others important to the advanced student of administration.
- b. Field studies of administrative problems which are currently in need of solution in localities convenient to the school. Small student groups with a faculty advisor actively study the problem to which they are assigned. Near the end of the course, the several problems which have been studied are presented for consideration by the whole class and faculty concerned. Ordinarily, one of the problems is taken from a foreign country to provide opportunity for the examination of comparative administration.

All students majoring in the Department of Public Health Practice are expected to take this course unless they have had equivalent experience previously.

Prerequisites: Public Health Practice 1a,b and Interdepartmental Course 1a.

Public Health Practice 11c,d. Health and Illness in Cross-Cultural Perspective

Seminars. *Mondays, 4-6, third and fourth periods.* Dr. PAUL.

Credit 2 units.

This course, also listed as Social Relations 283, is designed for public health students who seek greater familiarity with social and cultural aspects of medicine in this and other countries, and for social science students interested in health and health services as a research area. Much of the course consists of presentations by experts conducting specific studies of a sociomedical nature, followed by informal class discussion. Admission is limited and requires consent of the instructor.

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Public Health Practice 13c,d. Dental Public Health Practice

Conferences, seminars and field study. Time and credit to be arranged. Dr. DUNNING and associates.

This course is designed particularly for dentists. Emphasis is laid on the application of such sciences as epidemiology and biostatistics to dental problems and upon public health administration in the dental field.

Opportunities for clinical experience are available at the Harvard School of Dental Medicine under certain circumstances.

Public Health Practice 15a,b,c,d. Special Seminars

Seminars. *Wednesdays, 11-1* in all four periods; additional time to be arranged. Staff of the Department.

Credit 4-8 units.

Students are grouped according to their major interest field in the Department, with a faculty leader. Each student will be expected to work individually on a major project with the advice of a faculty member, to report to the seminar group for discussion of his plans for studying and later upon his results.

In addition, there will be discussions of administrative theory and phases of practice which are of special concern to the particular group that are not dealt with intensively in other courses.

These special seminars are arranged to supplement discussions in Public Health Practice 1a,b, Public Health Practice 10c,d and other courses in the Department.

Each student majoring in the Department is expected to take this course; students majoring in other departments may be admitted by special arrangement.

Students specializing in Community Mental Health attend a special seminar which meets for four to six hours weekly, and which focuses upon the integration of general public health studies within a conceptual framework of comprehensive community psychiatry. Special attention is devoted to the theory and practice of preventive psychiatry, with particular reference to techniques of mental health consultation and community organization.

Public Health Practice 17a,b,c,d. Special Projects

Time and credit to be arranged.

Students at the master's level may make arrangements to do individual work on a special project, under the guidance of a member of the Staff of the Department. These projects may include work in various areas of public health practice, such as medical care, mental health, cancer control, etc.

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Public Health Practice 20. Research

Doctoral candidates are offered the opportunity to undertake individual study and research as the basis for a doctoral thesis.

Public Health Practice 30. Assignments to Field Agencies

January 29–February 10, 1962; other assignments to be arranged.

Credit 2 units.

Students are assigned to work in the field on special projects, on surveys or other types of field projects in groups, or for observation of and limited participation in the work of health agencies.

Field assignments are made on an individual basis to meet special needs of each student in so far as possible. Work in the field is coordinated with courses in the Department.

A period of field study during the academic year is required of students majoring in public health practice. Students whose previous experience in public health practice is limited are expected to spend two months before the beginning or after the end of the academic year on a field assignment to be worked out with each student.

Public Health Practice 40d. Rehabilitation

Lectures and seminars. *Tuesdays, 9–11, fourth period.* Mr. CUBELLI.

Credit 1 unit.

This course is designed to consider the philosophy and role of rehabilitation in public health and medical care programs. The developing programs of service, research, and training under public and private auspices are discussed as well as the application of rehabilitation services to particular groups. Problems involved, such as motivation, education, employment and coordination of services, will be reviewed. Illustrations of services and problems will be demonstrated through case material and a visit to a rehabilitation center. Opportunities for field trips will be arranged.

Public Health Practice 41a,b,c,d. Economics and Administration of Medical Care

Seminars. Two hours weekly in all four periods. Time to be arranged. Dr. HAMLIN, Professor DUNLOP, Professor LIVERNASH and Dr. PETERSON.

Credit 4 units.

Advanced instruction for graduate students from the Schools of Public Health, Medicine, Business Administration, and Public Administration, including Department of Economics. The seminars will be held at Littauer Center for Public Administration with faculty from the participating schools and outside consultants.

The seminar deals with principles, patterns and problems of adapting

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resources, organization, and payment for health personnel and facilities to the needs and demands for personal health services. It explores major issues in the administration and economics of medical care, including medical care requirements, changing needs for health facilities and personnel, patterns of organization of medical care programs, standards of medical care and adequacy of services, government and private policies on providing and financing personal health services, factors affecting costs and pricing of various components of medical care, and economic and administrative developments in personal health service programs in other countries.

Emphasis is given to the analysis and evaluation of past and current research projects in economics and administration of personal health services. The applicability and contributions of research methods of various natural and social sciences are discussed.

Permission of the instructor in the School in which the student is registered is necessary.

DEPARTMENT OF TROPICAL PUBLIC HEALTH

THOMAS H. WELLER, A.B., S.M., M.D., LL.D., *Richard Pearson Strong Professor of Tropical Public Health and Head of the Department*

PAUL F. RUSSELL, A.B., M.D., M.P.H., S.D. (hon.), *Visiting Professor of Tropical Public Health*

FRANKLIN A. NEVA, S.B., M.D., *Associate Professor of Tropical Public Health*

ELI CHERNIN, S.B., A.M., S.D., *Assistant Professor of Tropical Public Health*

THOMAS E. FROTHINGHAM, M.D., *Assistant Professor of Tropical Public Health*

CHIA-TUNG PAN, B.SC., M.D., M.P.H., *Associate in Tropical Public Health*

EDWARD H. MICHELSON, S.M., PH.D., *Associate in Tropical Public Health*

FRED L. SOPER, A.B., S.M., M.D., DR.P.H., S.D. (hon.), *Visiting Lecturer on Tropical Public Health*

GEORGE M. SAUNDERS, A.B., M.D., *Visiting Lecturer on Tropical Public Health*

SAMUEL W. SIMMONS, S.B., PH.D., *Visiting Lecturer on Tropical Public Health*

G. ROBERT COATNEY, PH.D., S.D. (hon.), *Visiting Lecturer on Tropical Public Health*

HARRY MOST, S.B., M.D., D.T.M.&H., D.M.S., *Visiting Lecturer on Tropical Public Health*

DONALD B. McMULLEN, S.D., *Visiting Lecturer on Tropical Public Health*

ANDREW SPIELMAN, S.B., S.D., *Instructor in Tropical Public Health*

The health problems of the tropical regions are, for the most part, those of the poorly sanitated areas of the world at large. In such areas the com-

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municable and nutritional diseases are of primary import. The teaching and research interests of the Department of Tropical Public Health deal with the former category—the communicable diseases. Emphasis is given to disease entities that occur in the more developed areas of the world, and to a much smaller group of diseases that are tropical in an obligatory sense for climatic or other reasons. In the presentation of factual material, equal emphasis is given to ecological and epidemiological factors, to new knowledge concerning pathogenesis and diagnosis, and to prevention and control.

The basic course, Microbiology-Tropical Public Health 1a,b,c is designed to provide the Master of Public Health candidate with an integrated presentation of information on communicable diseases of major public health importance. Tropical Public Health 2a,b is designed for the Master of Public Health candidate concentrating in the field of Tropical Public Health. Attention is directed to Tropical Public Health 3d, open to all students, which deals with environmental and cultural factors influencing the development of health programs in tropical areas. With the exception of Tropical Public Health 3d, admission to the basic courses is contingent upon an adequate background in the pre-clinical medical sciences, especially pathology.

The investigative program in the Department is broad and currently deals with pathogens ranging from viruses to helminths. Thus, studies on the *in vitro* cultivation and the physiology and immunology of a wide variety of agents are in progress. Biological investigations on the molluscan vectors of the schistosomes comprise another area of major interest. Facilities are available for the training of a limited number of students at the Doctor of Public Health or Doctor of Science in Hygiene level, who may wish to spend a minimum of two years with emphasis on a program of original research. Due to time limitations, the Doctor of Science in Hygiene applicant should, in so far as possible, obtain the necessary medical science background prior to enrollment.

A program supported by the National Institutes of Health is available to assist qualified applicants who desire training in medical parasitology, (see page 97) and a similar program is available to provide training in tropical medicine and tropical public health.

Microbiology and Tropical Public Health 1a,b,c. Ecology and Epidemiology of Infectious Diseases

Lectures, seminars, conferences and laboratory exercises. *Tuesdays, Wednesdays and Thursdays, 9-10, Fridays, 2-5, first period; Tuesdays, Wednesdays and Saturdays, 9-10, Fridays, 2-5, second period; Tuesdays and Thursdays, 9-11, Wednesdays, 10-11, third period.* Dr. SNYDER, Dr. WELLER and the staff of the two Departments.

Credit 6 units.

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One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

This course is under the general direction of Drs. Snyder and Weller, with the collaboration of the staff of the Departments of Microbiology, Tropical Public Health and Epidemiology. The purpose of the course is to provide students in the Master of Public Health program with the basic knowledge of the communicable and infectious diseases, including the relevant ecologic factors which pertain directly to their prevention and control.

Microbiology and Tropical Public Health 1a,b,c is designed for students who have had most of the courses given in the first two years of medical school or their equivalent. The plan of the course includes several features which are new to the curriculum of the School. The introductory exercises provide an analysis of the present status of infectious diseases in tropical and temperate climates and the technics available for study of microorganisms and parasites, with special reference to recent methods which have opened a new era in microbiology. The course then considers the principal diseases of public health importance. The subjects are presented by etiologic agent, including protozoa, helminths, viruses, rickettsiae, spirochetes and bacteria.

Approximately two-thirds of the time will be devoted to lectures and one-third to conferences, seminar discussions, and laboratory exercises. In the laboratory the student is expected to acquire an understanding of the potentialities as well as the limitations of pertinent public health laboratory procedures.

Tropical Public Health 2a,b. Ecology and Prevention of Tropical Diseases

Seminars, laboratory exercises, assigned reading. *Wednesdays, 11-1, first and second periods.* Dr. NEVA, Dr. CHERNIN and Dr. FROTHINGHAM.

Credit 2 units.

This course is designed for students concentrating in the Department of Tropical Public Health. It is planned to supplement Microbiology-Tropical Public Health 1a,b,c, and deals with important disease entities omitted from the basic course because of time limitations. Emphasis is placed on the ecological and epidemiological approach to the multiplicity of interrelated factors governing the welfare of man in tropical and poorly sanitated areas.

Tropical Public Health 3d. Problems in Tropical Health

Lectures and conferences. *Fridays, 11-1, fourth period.* Staff of the Department.

Credit 1 unit.

This course is designed to provide general background information on environmental, social, economic, and political factors influencing the development of health programs in the tropics. At each session a distinguished guest

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lecturer covers an assigned topic; the subject material includes such diversified topics as the status of professional education in tropical areas, the importance of the zoonoses, and political policies in the field of international cooperation. Each formal presentation is followed by a period devoted to informal student discussion. Registration is open to all students.

Tropical Public Health 5c,d. Seminar

Seminars and discussions. One hour session twice a month throughout the third and fourth periods. Time to be arranged. Staff of the Department.

Credit .5 unit.

Students particularly interested in tropical health will meet with staff members for the presentation and discussion of current literature and original investigations. Admission for credit is subject to the approval of the Head of the Department, and the total number of students is limited.

Tropical Public Health 6c. Parasitic Infections of Man

Lectures, laboratory exercises, and demonstrations. *Tuesdays, 8:30-12:30, and Fridays, 2-5, February and March.* Dr. WELLER, Dr. NEVA, Dr. CHERNIN, Dr. FROTHINGHAM and associates.

Credit 1.5 units.

This course is designed primarily for students in the School of Medicine. It is open, however, to a limited number of students registered in the School of Public Health. The important helminth and protozoan parasites of man are considered with reference to their geographic distribution, identification, mode of transmission, pathogenesis, immune reactions, and methods for prevention and control. Clinical aspects and chemotherapy of parasitic diseases are discussed. Emphasis is given to methods of laboratory diagnosis. Arthropods of parasitologic importance are briefly surveyed.

Tropical Public Health 7c. Laboratory Technics

Conferences and laboratory. *Tuesdays and Thursdays, 2-5, third period.* Dr. PAN.

Credit 2 units.

Students are offered the opportunity to learn the technics of handling parasitic agents in culture or in laboratory animals, and to gain experience in the use of procedures employed in diagnostic and research laboratory work.

Enrollment limited and subject to the approval of the instructor.

Tropical Public Health 17a,b,c,d. Introduction to Laboratory Research

Laboratory exercises. Time and credit to be arranged.

Individual work for candidates at the Master's degree level may be carried out under supervision of a member of the Department. A variety of parasites

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of medical importance are maintained and are available for studies on metabolism, host-parasite relationships, and chemotherapy. Arrangements are subject to the approval of the instructor.

Tropical Public Health 20. Research

Doctoral candidates or qualified full-time special students may undertake original investigations in the laboratory or in the field by arrangement with the Head of the Department.

Tropical Public Health 41d. Introduction to Molluscs of Public Health Importance

Conferences, laboratory and field exercises. One afternoon a week, fourth period. Dr. MICHELSON.

Credit 1 unit.

This is an introductory course designed to acquaint the student with the molluscs which may act either as active or passive agents for the dispersal of pathogens, toxins, or parasites which cause disease in man. Students will be offered the opportunity to study field and laboratory technics necessary for an understanding of the taxonomy, morphology, cultivation, ecology and control of these molluscs.

Prerequisite: Consent of instructor.

Tropical Public Health 42c,d. History of Tropical Public Health

Seminar. Two hours every fourth week, third and fourth periods, time to be arranged. Dr. RUSSELL.

Credit .5 unit.

These seminars are designed to supplement Interdepartmental Course 3b which, however, is not a prerequisite. Discussions will focus on the development of understanding and control of such tropical diseases as malaria, plague, cholera, and yellow fever. Emphasized will be the interaction between public health and other social factors in the history of these diseases.

Tropical Public Health 43d. Introduction to Medical Entomology

Conferences, laboratory, and field exercises. *Wednesdays, 2-5, fourth period.* Dr. SPIELMAN.

Credit 1 unit.

This course deals with the insects, ticks and mites of medical importance. Their recognition, biology, and role in the production of disease are considered. Techniques of identification, collection, rearing and handling will be demonstrated and insect anatomy and physiology briefly reviewed.

Prerequisite: Consent of instructor.

Section IV
Special Programs

COURSES OF STUDY IN PREPARATION FOR ACADEMIC CAREERS

An analysis of the positions occupied by the alumni of the Harvard School of Public Health has shown that they are engaged in a wide range of activities in public health, engineering and medicine. It is of particular importance to the School, however, that approximately 20 per cent of its graduates have entered careers in education and research. Thus the curriculum must provide students with the basis for effective participation in the academic as well as the administrative aspects of public health. A course of study leading to a doctoral degree is the traditional way to prepare for an academic career. The alternative, for those who have completed their professional education, is to spend enough time as a research fellow to learn the technics of investigation and to acquire thorough knowledge of a particular field. The Harvard School of Public Health encourages both types of activity, and is seeking to improve its curriculum for advanced students and the opportunities for research fellows.

In pursuing these objectives the Faculty has, from time to time, undertaken new plans of instruction when it is clear that the School has both the opportunity and the ability to meet a need in one of the major areas of public health. The experience gained determines whether the particular undertaking can be incorporated into the general academic activity of the School. An example is the special program for teachers of preventive medicine and public health which was begun in 1956 and which has been integrated with the regular academic activities of the School, as described below.

Preventive Medicine and Public Health. In recognition of the need for well trained teachers of preventive medicine and of public health, the School plans to intensify its long term efforts to attract students whose field of endeavor is, or is likely to be, in departments of preventive medicine and public health in this country or abroad. The experience of the past five years has indicated that each candidate for an academic career in preventive medicine and public health should be encouraged to select either a research fellowship or that

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particular degree program of the School which is best suited to his individual needs and his own professional background. The regular academic programs of the School are sufficiently flexible to meet the varied needs of individual students seeking preparation for academic careers.

Regardless of their degree status, these students will be encouraged to acquire a high level of competence in one of the public health disciplines, this being regarded as most important for success in an academic career. Special seminars and short periods of observation at representative institutions will be included in the schedules offered by the School. When it is advantageous to a particular student, the School will seek to coordinate his course of study with residency training programs, such as those which may be recommended by the American Board of Preventive Medicine or which may be developed in other countries.

PROGRAMS RELATED TO MENTAL HEALTH AND MENTAL DISORDER

Problems of mental health and mental disorder are of concern to several departments of the School, particularly Epidemiology, Maternal and Child Health, and Public Health Practice. By developing opportunities for study and research in several aspects of the broad field of mental health, the School hopes to encourage the enrollment of students or the application of research fellows who are interested in mental health and who are qualified to undertake advanced studies in preparation for careers in teaching, research, and administration. For those who enroll as students, the programs in mental health are arranged within the framework of the various degrees offered by the School (see pages 25-32).

In the Department of Epidemiology, students and research fellows may undertake a program of study and research in the application of epidemiologic methods to mental disorders. The plan of work is arranged on an individual basis in consultation with the head of the Department.

In the Department of Maternal and Child Health, students may

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participate in the community studies which seek to understand the significance of mental disorders in pregnancy and childhood.

In the Department of Public Health Practice, a program in community mental health is available to candidates who may come from the disciplines of psychiatry, psychology, social work, or public health nursing if they are qualified for graduate study in community mental health. After completion of the academic year students are encouraged to spend two months or more in supervised field activities which provide experience in mental health administration. Individual programs are planned for advanced students by the Director of the Community Mental Health Unit in consultation with the Head of the Department of Public Health Practice.

PROGRAMS OF STUDY IN THE DIVISION OF ENVIRONMENTAL HYGIENE

The combination of medical, engineering, and related disciplines in the Division of Environmental Hygiene enables the School to offer programs of instruction in special fields such as occupational medicine, aviation health and safety, radiological health, and community air pollution control. The Division includes the Departments of Industrial Hygiene, Sanitary Engineering and Physiology. The University Health Services' Division of Environmental Health and Safety is closely related and provides opportunities for practical experience in environmental health activities within the University.

Occupational Medicine

Physicians may enroll in this program through any one of the Masters degrees offered by the School. Qualified students may be accepted for a second year of work toward a doctoral degree in one of the fields of occupational medicine or environmental health. Other students may elect to remain for a second year of formal courses and tutorial study in occupational medicine and public health.

The usual course content of the program is listed under the Master of Industrial Health degree (page 28). Additional courses and course content may be found under the department listings.

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Aviation Health and Safety

Students may undertake an academic program in Aviation Health and Safety as candidates for one of the various degrees offered by the School (see pages 25-32).

Weekly seminars given throughout the year are designed to meet the special interests of those concentrating in the field of aviation medicine, not only for representatives of the military services, but also for those who plan to enter the medical or engineering departments of aircraft manufacturing companies and civil airlines. Two fellowships of \$5,000 are offered each year by the Daniel and Florence Guggenheim Foundation for study in this field of concentration.

Industrial Hygiene and Industrial Hygiene Engineering

Since 1951 the U.S. Atomic Energy Commission has awarded fellowships to graduate students in engineering, chemistry, physics and biology for studies in industrial hygiene and industrial hygiene engineering. Students may be admitted to either the School of Public Health or the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences. Properly qualified candidates with a previous year of graduate work can be admitted to the School of Public Health as candidates for the Master of Science in Hygiene degree. Other candidates may be admitted through the Graduate School of Arts and Sciences for a Masters degree program. In either case, most of the industrial hygiene, physiology and environmental hygiene courses are available to students enrolled in this program.

Radiological or Health Physics and Radiation Control Programs

Programs in radiological hygiene and radiation control are offered by the School of Public Health to graduate students enrolled in either the School of Public Health or the Graduate School of Arts and Sciences. Properly qualified students including U.S. Atomic Energy Commission Fellows may be admitted. This program leads to a

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Master of Science in Hygiene degree (School of Public Health) or the Master of Science (Graduate School of Arts and Sciences). A program of courses in radiological hygiene, atomic and nuclear physics, radiological engineering, industrial hygiene, physiology, toxicology, radiation biology and related subjects is planned on the basis of individual backgrounds and needs.

PROGRAM IN PUBLIC HEALTH EDUCATION

This program is offered by the School of Public Health with the cooperation of the Department of Social Relations (Faculty of Arts and Sciences) and the School of Education. It includes required and elective courses in public health as well as courses in the social sciences and in education. The program is flexible and will be modified to suit the needs of the student. Classwork is supplemented by three months of supervised field training following the spring term.

Candidates may study for the degree of Master of Science in Hygiene. Work toward the degree of Doctor of Science in Hygiene is offered to exceptional students.

Health education is an area of public health in which there has been rapid development in recent years. Professional opportunities are numerous and varied and exist at local, state and national levels in both official and voluntary agencies.

Section V
General Information

GENERAL INFORMATION

REGISTRATION

Registration in the School of Public Health for the academic year 1961-62 takes place from Monday, September 18 to Friday, September 22. In order to allow ample time for planning of individual course programs and for discussions with Faculty members, students enrolling for the first time are expected to start the registration procedures on Monday of registration week.

FOREIGN STUDENTS

An orientation course for students coming to the United States for the first time will be held at the School of Public Health from Monday, September 11 to Friday, September 22, 1961. The program is planned to acquaint the students with our customs and teaching methods, with library and other facilities available. It will include lectures and seminars, visits to various University departments and to hospitals or public health activities in Boston.

During this period each student who comes from outside the United States will have a conference with the Faculty Advisor for Foreign Students to discuss his particular needs and interests. This Advisor, as well as the staff of the Dean's Office, is available for consultation with students throughout the year.

All students who are not citizens of the United States will be referred during the orientation period to the Harvard International Students' Office, 473 Broadway, Cambridge, where they will show their passports, and fill out a Student Registration form.

FEES AND EXPENSES

New students entering in the academic year 1961-62, and new doctoral candidates, will be charged a tuition fee of \$1,400 per year.

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Students who were enrolled in a degree program at the School during the academic year 1960-61 and who are continuing in the same degree program will be charged tuition at the former rate of \$1,150 up to a maximum of two years. Each candidate for a degree must have one year of residence at the School at full tuition. Degree candidates enrolled for more than one year may pay tuition at a reduced rate, depending on the amount of time spent at the School, as follows:

First year:	\$1,400
Second year:	
Full-time residents:	\$700
Part-time residents:	prorated, but not less than \$100 per term
Non-residents:	\$100 per term
After the second year:	\$100 per term for resident doctoral candidates

Special Students

Students who are not candidates for a degree but who are admitted for courses in a special field, on a full-time or a part-time basis, will pay tuition at the following rates:

Full-time students:	\$1,400
Part-time students:	\$35 per credit unit, plus \$5 for each course

If a part-time student who has paid tuition at the course rate becomes a degree candidate, the \$5 course fees are not included as part of the tuition required for the degree.

Health Service Fee

Each full-time student will be charged a fee of \$74 per year for health and medical care. Part-time students working at the rate of substantially half-time or less may be excused from the payment of such fee at any time within two weeks after their registration, upon the recommendation of the Dean.

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Payment of Fees

Bills for tuition and fees will be issued and payable as follows:

<i>Issued</i>	<i>Payable</i>	
At registration	Within 10 days	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \frac{1}{2} \text{ Health Service Fee} \end{array} \right.$
Nov. 30	Dec. 15	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \text{Board through October 31} \\ \text{Miscellaneous Charges} \end{array} \right.$
Jan. 30	Feb. 15	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \frac{1}{2} \text{ Health Service Fee} \\ \text{Board through December 31} \\ \text{Miscellaneous Charges} \end{array} \right.$
April 30	May 15	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \text{Board through March 31} \\ \text{Miscellaneous Charges} \end{array} \right.$
June 6*	June 13	$\left\{ \begin{array}{l} \text{Board to the end of the year} \\ \text{Miscellaneous Charges} \end{array} \right.$
June 30	July 15	$\left\{ \begin{array}{l} \text{Board to the end of the year} \\ \text{Miscellaneous Charges} \end{array} \right.$

Students who are candidates for degrees must have paid all dues to the University at least one day before the day upon which the degrees are to be voted. A student who leaves during the year is charged to the end of the tuition period in which he leaves provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the tuition period in which such notice is given.

A student who leaves the University for any reason whatever must pay all charges against him immediately upon receipt of a bill from the Bursar. Every student will be held responsible for the payment of fees until he has notified the Dean of his intention to withdraw from the School.

* Applies only to candidates for degrees.

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All term bills will be sent to the student at his local address unless the Bursar is requested in writing to send them elsewhere.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University. Reinstatement is obtained only by consent of the Dean of the School in which the student is enrolled after payment of all indebtedness and a reinstatement fee of \$10. In addition as a condition of reinstatement such student is required to file with the Bursar a bond in the amount of \$1000 as security for the payment of future term bills.

Bond Requirement

The University requires that all foreign students whose term bills are neither guaranteed by their governments nor paid in full by other outside sources must file a bond in the amount of \$1000 as security for their term bills. This bond may be obtained without cost to the student upon application to the Registrar of the School in which he is enrolled.

STUDENT HEALTH SERVICE

Under the University Health and Insurance Plan students at the School receive medical care in the Harvard Medical Center Clinic at the Peter Bent Brigham Hospital and insurance toward hospital expenses, at a fee of \$74 per year. All full-time students are required to pay this fee. The hospital insurance runs for a period of twelve months and covers hospitalization both in Boston and elsewhere.

Officers of the armed services, or those required to carry hospital insurance by governmental agencies may request exemption from the insurance portion of the fee but will be required to pay the clinic fee in the amount of \$54. Exemption from the insurance will be granted only after the student submits evidence that he has satisfactory coverage for hospital expenses.

Dependents of students may be included in the insurance aspects

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of the plan, if the student so elects; the rates are \$40 for wives or husbands and \$26 for one or more children, for twelve months.

Every new student paying the medical fee is required to undergo a complete medical examination, by appointment, shortly after admission to the School.

Evidence of recent successful vaccination against smallpox is required for entrance to Harvard University and a certification form for this purpose is sent to each student who is accepted for admission.

Any illness necessitating absence from classes should be reported to the Student Health Service Office by the student, or an attending physician, and to the Information Office at the School.

In order to realize maximum benefit from the opportunities provided by the academic program of the School, students must be in excellent physical and mental health. Prospective students are urged to undergo a thorough examination to satisfy themselves of their fitness before making arrangements to enter the School.

HOUSING

The Henry Lee Shattuck International House of the School of Public Health was opened in the fall of 1960 to provide housing for students and their families. The International House includes three apartment houses, situated at 199, 203 and 207 Park Drive, Boston, a few minutes' walk from the School. There are 69 apartments on four floors, including units with one to four rooms, plus kitchenette, bath and foyer. Essential furniture and kitchen equipment are provided. Laundry facilities and a play area for children are located in the basement of building 207, and social and recreational facilities for the common use of residents are planned on the ground floor by September, 1961.

Furnished rooms for single students are available in the vicinity of the School, or in nearby residential areas such as Brookline.

Students who wish to apply for an apartment in the International House or who wish help in finding a room or a house, should write to the Registrar, Harvard School of Public Health, 55 Shat-

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tuck Street, Boston, after they receive notice of admission to the School. Married students should indicate the size of their family, number of rooms desired and whether they wish furnished or unfurnished quarters.

EMPLOYMENT

Generally it is not advisable for a student to seek employment as a means of financing his training because the course of study at the School is an intensive, full-time program. If the wife of a student has secretarial or technical skills and wishes to obtain temporary employment, she may consult the Harvard Medical Center Personnel Office in Building A of the Medical School after getting settled in Boston. Wives of foreign students who wish to work in Boston should indicate this when obtaining their visas for the United States.

SCHOLARSHIPS, FELLOWSHIPS AND TRAINEESHIPS

The scholarships, fellowships and traineeships described below were available to students for the academic year 1960-61. It is expected that comparable awards will be available for 1962-63.

Applications for scholarships, traineeships and fellowships should be made to: The Registrar, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts. Applications should be received by April 1, 1962 for awards for the academic year 1962-63. Under exceptional circumstances awards may be made at other times. There are separate regulations for: Public Health Traineeships Title I, Atomic Energy Commission Fellowships and Fellowships and Scholarships Available in other Departments of the University (page 98).

Traineeships and Fellowships

Public Health Service Traineeships Title I, for physicians, nutritionists, medical social workers, dentists, health educators, veterinarians and others whose professional skills are required in modern public health practice. Similar traineeships are also available

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to those wishing to specialize in radiological hygiene and in air pollution control problems. Students are urged to apply directly to the Public Health Service: Chief, Division of General Health Services, Bureau of State Services, Public Health Service, U.S. Department of Health, Education and Welfare, Washington 25, D.C. A limited number of these traineeships are available from the institutional grant awarded by the Public Health Service to the School.

Public Health Service Traineeships Title II, Traineeships for Nurses, are all awarded from an institutional grant to the Harvard School of Public Health.

The Title I and Title II traineeships are available only to citizens of the United States or to those who have filed a Declaration of Intent.

A fellowship provided by a grant from the Children's Bureau, is available for a student who intends to specialize in Maternal and Child Health.

A fellowship from the Charles H. Hood Dairy Foundation, Inc. is available for a pediatrician having special qualifications (i.e., nearing attainment of certification by the American Board of Pediatrics) to work toward the degree of Master of Public Health.

National Institutes of Health Fellowships. The National Institute of Mental Health has fellowships for psychiatrists, psychologists and social workers who wish to specialize in mental health aspects of public health. The other Institutes of Health such as the National Cancer Institute, National Institute of Arthritis and Metabolic Diseases, the National Heart Institute, etc. also have fellowships.

Traineeships in epidemiology are available to candidates with degrees of M.D., Ph.D. or equivalent. They are given on an annual basis and are renewable.

There are traineeships in biostatistics for pre-master's training and pre-doctoral research.

Traineeships are available in microbiology, nutrition, physiology, and tropical public health at the pre-doctoral and post-doctoral levels.

Fellowships are available in Industrial Medicine and Industrial Hygiene from the Atomic Energy Commission. Applicants for

HARVARD UNIVERSITY

fellowships in Industrial Medicine (physicians only) should write to: A.E.C. Fellowships in Industrial Medicine, Atomic Energy Project, University of Rochester, School of Medicine and Dentistry, Rochester 20, New York. Applicants for fellowships in Industrial Hygiene (industrial hygienists) should write to: Industrial Hygiene Fellowship Office, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee.

The Daniel and Florence Guggenheim Foundation gives the School two fellowships each year to be awarded to students who are in the program of the Guggenheim Center for Aviation Health and Safety at the School.

Fellowships for one to three years in Community Mental Health have been made possible by a grant from the Grant Foundation of New York. The purpose of these fellowships is to supply trained specialists in the field of community mental health. The fellowships are intended for psychiatrists, clinical psychologists, and social workers who are studying at a level consistent with a Master's or Doctor's degree.

Fellowships and Scholarships Available in other Departments of the University as well as in the School of Public Health

There are a few General University Scholarships and Fellowships which, under the terms of the original gift to the University, may be awarded to students in any part of the University, including the School of Public Health. Many of these are for persons from a particular city, state or country, for study of a particular field, or for those with other special qualifications. Applications for these scholarships must be received at the School of Public Health by February 1, 1962. A pamphlet describing these University Scholarships may be obtained from the Secretary of Admissions and Scholarships of the School of Public Health.

STUDENTS, 1960-1961

DEGREE CANDIDATES AND FULL-TIME SPECIAL STUDENTS

Adams, Anthony C., M.B.,B.S.	North Adelaide, South Australia
Akay, Vedat F., M.D., D.P.H.	Afyon, Turkey
Anderson, Donald O., B.A., M.D., F.R.C.P.	Vancouver, B.C., Canada
Baier, John H., S.B., M.D.	Martinez, Calif.
Baler, Lenin A., PH.D., S.M. IN HYG.	Holbrook, Mass.
Barry, Peter E., A.B., M.D.	Wellesley, Mass.
Bartlett, Jay P., S.B., M.D., M.P.H.	Ogden, Utah
Bing, Peter S., A.B., M.D.	Los Angeles, Calif.
Bishop, Yvonne M. M., B.A.	Worthing, Sussex, England
Bragg, Robert L., S.B., A.M., M.D., M.P.H.	Tallahassee, Fla.
Brigante, Thomas R., PH.D.	North Easton, Mass.
Broell, Kathleen M., S.B.	Seattle, Wash.
Browne, Ivor W., L.R.C.P., M.R.C.S.I., D.P.M.	Dublin, Ireland
Bryant, Charles M., A.B., M.D.	Galveston, Texas
Bullen, Beverly A., S.M., S.M. IN HYG.	Chattanooga, Tenn.
Buranakarl, Chote, M.D., M.P.H.	Bangkok, Thailand
Burger, Edward J., B.SC., M.D.,C.M., M.I.H.	Lorain, Ohio
Byron, Virginia D., S.B., M.S.W.	San Francisco, Calif.
Cargill, Louis H., A.B., M.D.	West Orange, N.J.
Caso, Elizabeth K., S.M.	Jamaica Plain, Mass.
Chen, Kung-pei, M.D., M.P.H., DR.MED.SC.	Taipei, Taiwan
Cherubin, Charles E., S.B., M.D.	Brooklyn, N.Y.
Clayton, Lewis B., M.D.	Fort Lauderdale, Fla.
Cohen, Felix, A.B., M.D., M.P.H.	Waban, Mass.
Cullen, Marion P., S.M.	Georgetown, Pa.
D'Arth, James S., B.SC.	Mount Isa, Australia
Davies, John E., M.B.,B.S., M.R.C.S., L.R.C.P. L.M.C.C.	Winnipeg, Man., Canada
Denniston, George C., Jr., A.B., M.D.	Philadelphia, Pa.
Dhamdhere, Madhav R., M.B.,B.S., D.P.H., M.P.H.	Bombay, India
Dinbergs, Ilga K., M.SC., M.D.	Methuen, Mass.
Duggar, Benjamin C., S.M.	St. Petersburg, Fla.
Dunn, Robert H., A.B., M.D.	Melrose, Mass.
Erhardt, Carl L., B.A., M.P.A., S.M. IN HYG. (in absentia)	Woodhaven, N.Y.
Everett, Evalyn G., PH.D.	Napa, Calif.

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Faragalla, Farouk F., B.V.SC., M.D.V., S.M. IN
HYG.

Fernando, Malcolm A., M.B.,B.S., D.P.H.

Fogleman, Ruth D., B.SC., S.M.

Fulmer, Hugh S., A.B., M.D.

Gaeta, Neil A., S.M.

Glass, Robert L., S.B., D.M.D., M.P.H.

Glasser, Marvin N., B.B.A., M.P.H.

Goldrath, Carolynn M., A.B., M.S.W.

Gruschka, Ruth, M.S.W.

Gulati, Prem Vir, M.B.,B.S.

Hall, Thomas L., A.B., M.D.

Hannon, Virginia R., A.M., M.S.W.

Harfouche, Jamal K., B.A., M.D., S.M. IN HYG.

(in absentia)

Hayashida, Takuya, M.AGR.

Hertzog, James E., S.B., M.D.

Holt, Clinton L., S.B., M.D.

Hosack, Alice M., S.B., A.M., S.M. IN HYG.

Jackson, Howard W., B.ED., S.M. IN HYG.

Johnson, Louis F., Jr., S.B., M.D., M.P.H.

(in absentia)

Kamel, Wadie W., M.B.,B.CH.

Kar, Satyabrata, M.B.,B.S., D.P.H.

Klerman, Lorraine V., S.B., M.P.H.

(in absentia)

Kogon, Alfred, A.B., M.D.

Kozarevic, Djordje, M.D.

Lamp, Herschel C., A.B., M.D.

Legters, Llewellyn J., A.B., M.D.

Librea y Altamirana, Arturo, M.D.

Lin, Hsiang Ju, A.B., S.M. IN HYG.

Lochaya, Serene, B.SC., S.M., S.M. IN HYG.

Madhavankutty, Chittenipat P., M.B.,B.S.,
D.P.H., M.P.H.

Mahon, William A., L.R.C.P.ED., L.R.C.S.ED.,
L.R.F.P.&S. GLAS.

Masse, Louis M. F., M.D., M.P.H.

(in absentia)

Masters, Richard L., S.B., M.D.

Mata, Leonardo, LIC. IN MICRO. & CLIN.
CHEM., S.M. IN HYG.

McClellan, Samuel G., A.B., M.D.

Cairo, Egypt

Colombo, Ceylon

Rio Piedras, P.R.

Lexington, Ky.

Medford, Mass.

Westwood, Mass.

Boston, Mass.

San Mateo, Calif.

Jerusalem, Israel

New Delhi, India

Concord, Mass.

Atlanta, Ga.

Beirut, Lebanon

Fukuoka, Japan

Ebensburg, Pa.

Hoople, N. Dak.

Sharon, Pa.

Hopkinton, Mass.

Washington, D.C.

Cairo, Egypt

Cuttack, Orissa, India

Silver Spring, Md.

Brooklyn, N.Y.

Belgrade, Yugoslavia

Alhambra, Calif.

Clymer, N.Y.

Lipa City, Philippines

Cannes, France

Thonburi, Thailand

Madras, India

Grimsby, Ont., Canada

Reims, Marne, France

Detroit, Mich.

Guadalupe, Costa Rica

Cambridge, Mass.

SCHOOL OF PUBLIC HEALTH

Menken, Jane A., A.B.	Philadelphia, Pa.
Miller, Kent S., PH.D.	Tallahassee, Fla.
Mohr, George C., A.B., B.A., M.D.	Laredo, Texas
Neill, Robert H., M.E.	Washington, D.C.
Nevinny-Stickel, Hans B., M.D.	Newton Center, Mass.
Ossi, George T., M.D., M.P.H.	Mosul, Iraq
Osterman, Naomi, S.M.	Providence, R.I.
Ozarin, Lucy D., S.B., M.D.	Buffalo, N.Y.
Plank, Stephen J., PH.B., A.B., M.D.	Carmel, Calif.
Poskanzer, David C., A.B., M.D.	Boston, Mass.
Raulet, Harry M., A.B., PH.D.	Annandale-on-Hudson, N.Y.
Reighard, Homer L., S.B., M.D.	Bethesda, Md.
Requena, Mariano, M.D., M.P.H.	Santiago, Chile
Revotskie, Nicholas, S.B., M.D.	Weston, Mass.
Roen, Sheldon R., S.B., A.M., PH.D.	Durham, N.H.
Samuels, Larry D., A.B., M.D.	New Windsor, Ill.
Saxton, George A., Jr., M.D.	Hinsdale, Ill.
Schultz, Irwin, A.B., M.D., S.M. IN HYG.	Morton Grove, Ill.
Scotch, Norman A., PH.D.	Boston, Mass.
Segall, Ascher J., M.D., M.P.H.	Montreal, P.Q., Canada
Seigel, Daniel G., S.B., A.M., S.M.	Brooklyn, N.Y.
Shahidi, Marie T., M.D.	Tehran, Iran
Shamburek, Roland H., S.B., M.D.	Killeen, Texas
Shultz, Carl S., M.D., M.P.H.	Washington, D.C.
Siegel, Gordon S., A.B., M.D., S.B.	Chicago, Ill.
Smith, Joseph J., S.B., M.D.	New York, N.Y.
Sogandares, Lucila E., B.SC., S.M.	Panama City, Panama
Spence, Harry Y., M.D.	Washington, D.C.
Strand, Donald J., A.B., S.B., M.D.	Mandan, N. Dak.
Tarr, John D. F., A.B., M.D.	Los Angeles, Calif.
Temoche, Abelardo, M.D., M.P.H.	Lima, Peru
Tepper, Lloyd B., A.B., M.D., M.I.H.	Los Angeles, Calif.
Thompson, Marilyn M., A.B.	Boston, Mass.
Vanella, Jose M., M.D.	Cordoba, Argentina
Van Wyngarden, Don R., A.B., D.D.S.	Kirkwood, Mo.
White, Richard F., A.B., M.D.	Auburn, Calif.
Wittmer, James F., M.D.	Houghton, Mich.
Yoder, Robert E., S.B.	Watertown, Mass.
Yoshizawa, Susumu, M.ENG.	Saitama-ken, Japan
Yuasa, Shu, M.D., DR.MED.SC.	Tokyo, Japan

HARVARD UNIVERSITY

PART-TIME STUDENTS

Avitabile, Florence, M.D.	Wellesley, Mass.
Cass, Victoria M., A.B., M.D., M.P.H.	Winchester, Mass.
Demaree, Virginia G., S.B.	Plattsmouth, Neb.
Hall, Marie-Francoise, B.Sc., M.D.	Concord, Mass.
Hunt, Edward E., Ph.D.	Magnolia, Mass.
Kravitz, Sanford L., A.B., S.M.	Schenectady, N.Y.
Murphy, Theresa M., S.B.	Northampton, Mass.
Neumann, Alfred K., A.B., A.M., M.D., M.P.H.	Brookline, Mass.
Worcester, Marcia B., A.B.	Waltham, Mass.

DEGREES

On June 16, 1960, the following degrees were conferred:

MASTER OF PUBLIC HEALTH

- Clifford Anderson, S.B. (*Univ. of Washington*) 1939, M.D. (*Univ. of Oregon*) 1944
 Moises Behar, M.D. (*Univ. of Guatemala*) 1949
 Freda Burton Bonner, B.A. (*Trinity Coll., Ireland*) 1951, M.B., B.A.O., B.CH. (*ibid.*) 1953
 Bertram S. Brown, A.B. (*Brooklyn Coll.*) 1952, M.D. (*Cornell Univ.*) 1956
 Etta Colish Bryant, A.B. (*Rice Inst.*) 1951, M.D. (*Univ. of Texas*) 1957
 Louis J. P. Calisti, D.D.S. (*Univ. of Pennsylvania*) 1949
 Ante Josip Catipovic, M.D. (*Univ. of Zagreb, Yugoslavia*) 1952
 William Chu, B.M. (*Taihoiku Imperial Univ., Taiwan*) 1945
 Pierre Jules Delon, M.D. (*Univ. of Lyon, France*) 1945
 Madhav Ramchandra Dhamdhare, M.B., B.S. (*Grant Medical Coll., India*) 1941, D.P.H. (*All India Inst. of Hygiene and Public Health*) 1950
 Margaret Hay Edwards, A.B. (*Western Coll.*) 1934, M.D. (*Temple Univ.*) 1944
 James Gerard Fitzgerald, M.B., B.CH., B.A.O. (*University Coll., Ireland*) 1942
 Barbara Terrile Ganem, A.B. (*Radcliffe Coll.*) 1951, M.D. (*Boston Univ.*) 1955
 Georgette Pauline Gelinias, B.A. (*Laval Univ., Canada*) 1939, M.D. (*ibid.*) 1943
 Everardo Enrique Gonzalez Galvez, B. OF PRE. MED. (*Univ. of Panama*) 1952, M.D. (*ibid.*) 1956
 Nadim Abid Haddad, M.D. (*American Univ. of Beirut, Lebanon*) 1954
 George Barkley Hutchison, A.B. (*Harvard Univ.*) 1943, M.D. (*ibid.*) 1951
 Robert Samuel Johnson, A.B. (*Univ. of Colorado*) 1950, M.D. (*ibid.*) 1953
 Elton Kessel, A.B. (*Univ. of Chicago*) 1940, M.D. (*ibid.*) 1952
 Michael Lavie, M.U.D.R. (*Charles Univ., Czechoslovakia*) 1946
 Chieh Lu, M.B. (*Faculty of Medicine, National Defense Medical Center, Taiwan*) 1954
 Robert Burnett McGandy, A.B. (*Harvard Univ.*) 1951, M.D. (*Cornell Univ.*) 1955
 Nalval Madayya Madesayya, M.B., B.S. (*Stanley Medical Coll., India*) 1948, B.S.S.C. (*Madras Medical Coll., India*) 1950
 Chittenipat P. Madhavankutty, M.B., B.S. (*Stanley Medical Coll., India*) 1953, D.P.H. (*All India Inst. of Hygiene and Public Health*) 1958
 Antonio Samuel Medina, M.D. (*George Washington Univ.*) 1943
 Joseph Morton Miller, A.B. (*Harvard Univ.*) 1942, M.D. (*ibid.*) 1945
 Howard Alyn Minners, A.B. (*Princeton Univ.*) 1953, M.D. (*Yale Univ.*) 1957

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- Vardges Nahapetian, M.D. (*Univ. of Tehran, Iran*) 1943
 Alfred Kurt Neumann, A.B. (*Univ. of Wisconsin*) 1952, A.M. (*ibid.*) 1955, M.D. (*New York Univ.*) 1958
 Charlotte Grantz Neumann, A.B. (*Columbia Univ.*) 1950, M.D. (*Harvard Univ.*) 1954
 Boen-Tjiang Pouw, M.D. (*Univ. of Indonesia*) 1959
 Donald William Price, S.B. (*Univ. of Wisconsin*) 1954, M.D. (*ibid.*) 1957
 Mariano Requena B, M.D. (*Univ. of Chile*) 1955
 Enrique Roig, B.S. (*Belen Coll., Cuba*) 1927, M.D. (*Univ. of Havana, Cuba*) 1938
 Frederick Torgbor Sai, B.Sc. (*University Coll., England*) 1950, M.B., B.S. (*ibid.*) 1953, D.T.M.&H. (*London School of Hygiene and Tropical Medicine*) 1956
 Charles Henry Sawyer, S.B. (*Univ. of Washington*) 1949, S.M. (*ibid.*) 1951, M.D. (*Univ. of Oregon*) 1957
 Carl Swan Shultz, M.D. (*Johns Hopkins Univ.*) 1948
 Seyed Noorollah Sotoodeh, M.D. (*Tehran Univ., Iran*) 1943
 Dirk Jacobus Spruyt, A.B. (*Swarthmore Coll.*) 1950, M.D. (*Univ. of Rochester*) 1954
 Julian Arnold Waller, A.B. (*Columbia Univ.*) 1953, M.D. (*Boston Univ.*) 1957
 James Russell Wamsley, A.B. (*Univ. of Nebraska*) 1951, M.D. (*ibid.*) 1956, S.M. (*ibid.*) 1956
 Charles Louis Wilson, S.B. (*Western Reserve Univ.*) 1951, M.D. (*ibid.*) 1955

MASTER OF INDUSTRIAL HEALTH

- Ian Hall Anderson, M.B., CH.B. (*Univ. of Aberdeen, Scotland*) 1952
 Edward James Burger, B.Sc. (*McGill Univ.*) 1954, M.D., C.M. (*ibid.*) 1958
 Edward Percival Carrigan, M.B., CH.B. (*Univ. of Liverpool, England*) 1952
 John Robert Dille, S.B. (*Waynesburg Coll.*) 1952, M.D. (*Univ. of Pittsburgh*) 1956
 Lloyd Barton Tepper, A.B. (*Dartmouth Coll.*) 1954, M.D. (*Harvard Univ.*) 1957

MASTER OF SCIENCE IN HYGIENE (in the field of Epidemiology)

- Herman Jack Geiger, M.D. (*Western Reserve Univ.*) 1958
 Bal K. Jerath, B.Sc. (*Forman Christian Coll., Pakistan*) 1940, M.B., B.S. (*King Edward Medical Coll., Pakistan*) 1945, M.P.H. (*Univ. of California*) 1955
 Vaun Archie Newill, S.B. (*Juniata Coll.*) 1943, M.D. (*Univ. of Pittsburgh*) 1947
 Raymond Owen West, S.B. (*La Sierra Coll.*) 1947, M.D. (*Coll. of Medical Evangelists*) 1951, M.P.H. (*Harvard Univ.*) 1959

SCHOOL OF PUBLIC HEALTH

(in the field of Maternal and Child Health)

- Marie Carolyn Goik, S.B. (*Columbia Univ.*) 1947, A.M. (*ibid.*) 1951
Barbara Eleanor Nelson, S.B. (*Simmons Coll.*) 1954, ED.M. (*Harvard Univ.*)
1959

(in the field of Nutrition)

- Beverly Anne Bullen, S.B. (*Univ. of Wisconsin*) 1947, S.M. (*Wellesley Coll.*)
1950
Farouk Farid Faragalla, B.V.Sc. (*Cairo Univ., Egypt*) 1950, M.D.V. (*ibid.*) 1954
Nicole Simonne Leboeuf, B.Sc. (*Laval Univ., Canada*) 1954
Anusith Rajatasilpin, M.D. (*Univ. of Medical Sciences, Thailand*) 1951, M.P.H.
(*ibid.*) 1958
Roberto Rueda-Williamson, M.D. (*National Univ. of Colombia*) 1943

(in the field of Public Health Practice)

- Audrey Mary McCluskey, S.B. (*Temple Univ.*) 1945, A.M. (*Columbia Univ.*)
1948

(in the field of Public Health Practice, Community Mental Health)

- Lenin Allen Baler, A.B. (*Harvard Univ.*) 1944, A.M. (*Boston Univ.*) 1948,
PH.D. (*ibid.*) 1950
James Gordon Kelly, A.B. (*Univ. of Cincinnati*) 1953, A.M. (*Bowling Green
State Univ.*) 1954, PH.D. (*Univ. of Texas*) 1958
Sven Bertil Lundstedt, A.B. (*Univ. of Chicago*) 1952, PH.D. (*ibid.*) 1955
Alice Lillian Peck, S.B. (*Hartwick Coll.*) 1935, M.S.W. (*Boston Coll.*) 1949
Melvin Prince Reid, A.B. (*Univ. of Miami*) 1949, S.M. (*ibid.*) 1951, PH.D.
(*Louisiana State Univ.*) 1954
Thomas Allen Rich, A.B. (*Univ. of Florida*) 1952, A.M. (*ibid.*) 1955, PH.D.
(*ibid.*) 1957

(in the field of Tropical Public Health)

- Leonardo Mata Jimenez, LIC. IN MICRO. & CHEM. (*Univ. of Costa Rica*) 1957
Irwin Schultz, A.B. (*New York Univ.*) 1949, M.D. (*ibid.*) 1954

(in the field of Environmental Health)

- Howard Edward Chaney, S.B. (*Johns Hopkins Univ.*) 1955, M.P.H. (*ibid.*) 1957
John Charles Collins, S.B. (*Tufts Univ.*) 1950, S.M. (*Harvard Univ.*) 1954
Ayyaswamy Ramamurthy, B.Sc. (*Annamalai Univ., India*) 1956, M.Sc. (*ibid.*)
1957

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(in the Program for Teachers of Preventive Medicine and Public Health)

Nghiem Lenh Thieu, M.D. (*Univ. of Hanoi, Vietnam*) 1952, M.P.H. (*Univ. of Michigan*) 1956

On March 13, 1961, the following degrees were conferred:

DOCTOR OF PUBLIC HEALTH

Moye Wicks Freymann, S.B. (*Yale Univ.*) 1945, M.D. (*Johns Hopkins Univ.*) 1948, M.P.H. (*Harvard Univ.*) 1956

Thesis: Medical Students' Perceptions of a Public Health Career

Special Field: Public Health Practice

DOCTOR OF SCIENCE IN HYGIENE

Robert Victor Fultyn, S.B. (*Northwestern Univ.*) 1954, S.M. (*ibid.*) 1955, S.M. IN HYG. (*Harvard Univ.*) 1958.

Thesis: Adsorption of Sulfur Dioxide in Fixed and Fluidized Carbon Beds

Special Field: Industrial Hygiene

Lucila Elena Sogandares, S.B. (*Coll. of St. Teresa*) 1939, S.M. (*Simmons Coll.*) 1945

Thesis: Nutritional Study of Preschool Children in a Panamanian Village

Special Field: Nutrition

FALL TERM — FIRST PERIOD (September 25 to November 18, 1961)

INTERDEPARTMENTAL COURSE	Credit Units	MICROBIOLOGY	Credit Units
1a The Human Community **	2.5	1a,b,c Ecology and Epidemiology of Infectious Diseases **	2 (6)
40a,b,c Biostatistics and Epidemiology ***	3	15a,b Seminars in Microbiology	1 (2)
ENVIRONMENTAL HYGIENE		NUTRITION	
2a,b Radiological Hygiene	1.5 (3)	1a Public Health Nutrition **	2.5
3a,b Occupational Medical Clinics	.5 (1)	PHYSIOLOGY	
5a,b Aviation Health and Safety	1 (2)	1a,b Human Physiology	1.5 (3)
BIOSTATISTICS		PUBLIC HEALTH PRACTICE	
1a,b Principles of Biostatistics *	1.75 (3.5)	1a,b Basic Concepts of Public Health Practice *	1 (3)
15a,b Special Seminar	1 (2)	15a,b Special Seminars	1-2 (2-4)
EPIDEMIOLOGY		TROPICAL PUBLIC HEALTH	
1a,b Principles of Epidemiology *	1 (2.5)	1a,b,c Ecology and Epidemiology of Infectious Diseases **	
15a,b Departmental Seminars	1 (2)	(see listing under Microbiology 1a,b,c for credit units)	
INDUSTRIAL HYGIENE		2a,b Ecology and Prevention of Tropical Diseases	1 (2)
2a,b Industrial Air Analysis	2 (4)		
6a,b Industrial Ventilation and Air Conditioning	2 (4)		
MATERNAL AND CHILD HEALTH			
15a,b Departmental Seminar	1 (2)		

Unscheduled courses: Interdept. Course 42a,b; Epidemiology 17a,b; Microbiology 17a,b; Nutrition 17a,b; Physiology 17a,b; Public Health Practice 17a,b, 41a,b; Sanitary Engineering 2a,b; Tropical Public Health 17a,b. (See Department for description)

* Required of M.P.H. candidates

** Semi-elective courses for M.P.H. candidates

*** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9	PUBLIC HEALTH PRACTICE 1 a, b*	MICRO.- T. P. H. 1 a, b, c **	MICRO.-T.P.H. 1 a, b c **	INTERDEPT. COURSE 40 a, b, c BIO.- EPID. ***	PUBLIC HEALTH PRACTICE 1 a, b*	INTERDEPT. COURSE 40 a, b, c BIO.- EPID. ***
10	IND. HYG. 6 a, b	EPIDEM. 1 a, b*	INTERDEPT. COURSE 1 a** HUMAN COMMUNITY	EPIDEM. 1 a, b*	NUTRITION 1 a**	ENV. HYG. 3 a, b CLINICS
11					IND. HYG. 6 a, b	
12	INTERDEPARTMENTAL COURSE 1 a** HUMAN COMMUNITY	BIOSTAT. 1 a, b*	ENV. HYG. 5 a, b BIOSTAT. 15 a, b EPID. 15 a, b MICRO. 13 a, b P. H. P. 15 a, b T. P. H. 2 a, b	BIOSTAT. 1 a, b*	INTERDEPARTMENTAL COURSE 1 a** HUMAN COMMUNITY	
1		PHYS. 1 a, b ENV. HYG. 2 a, b		PHYS. 1 a, b		
2						
3	BIOSTATISTICS 1 a, b* LABORATORY	IND. HYG. 2 a, b LAB.	ENV. HYG. 2 a, b RAD. HYG.	M. C. H. 15 a, b	NUTRITION 1 a**	MICRO. BIOLOGY TROPICAL PUBLIC HEALTH 1 a, b c** LAB.
4					IND. HYG. 2 a, b LAB.	IND. HYG. 6 a, b
5						

* REQUIRED OF M. P. H.
CANDIDATES** SEMI-SELECTIVE COURSES
FOR M. P. H. CANDIDATES*** REQUIRED OF S. M. HYG.
CANDIDATES

FALL TERM — SECOND PERIOD (November 20, 1961 to January 27, 1962)

INTERDEPARTMENTAL COURSE		Credit Units	
3b	History and Philosophy of Public Health	1	
40a,b,c	Biostatistics and Epidemiology ***	2	(7) †
ENVIRONMENTAL HYGIENE			
2a,b	Radiological Hygiene	1.5	(3)
3a,b	Occupational Medical Clinics	.5	(1)
5a,b	Aviation Health and Safety	1	(2)
BIOSTATISTICS			
1a,b	Principles of Biostatistics *	1.75	(3.5)
15a,b	Special Seminar	1	(2)
EPIDEMIOLOGY			
1a,b	Principles of Epidemiology *	1.5	(2.5)
3b	Clinical Problems in Infectious Disease	1	
15a,b	Departmental Seminars	1	(2)
INDUSTRIAL HYGIENE			
2a,b	Industrial Air Analysis	2	(4)
6a,b	Industrial Ventilation and Air Conditioning	2	(4)
MATERNAL AND CHILD HEALTH			
1b	Principles of Maternal and Child Health **	2	
15a,b	Departmental Seminar	1	(2)

Unscheduled courses: Interdept. Course 42a,b; Epidemiology 17a,b; Maternal and Child Health 17b,c,d; Microbiology 17a,b; Nutrition 17a,b; Physiology 17a,b; Public Health Practice 17a,b, 41a,b; Sanitary Engineering 2a,b; Tropical Public Health 17a,b. (See Department for description)

* Required of M.P.H. candidates

** Semi-elective courses for M.P.H. candidates

*** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

MICROBIOLOGY		Credit Units	
1a,b,c	Ecology and Epidemiology of Infectious Diseases **	2	(6)
2b	Current Research	1	
15a,b	Seminars in Microbiology	1	(2)
PHYSIOLOGY			
1a,b	Human Physiology	1.5	(3)
PUBLIC HEALTH PRACTICE			
1a,b	Basic Concepts of Public Health Practice *	2	(3)
3b	Development of Personality	1	
4b,c	Control of Chronic Disease and Cancer, Gerontology and Rehabilitation	1	(2)
15a,b	Special Seminars	1-2	(2-4)
TROPICAL PUBLIC HEALTH			
1a,b,c	Ecology and Epidemiology of Infectious Diseases ** (see listing under Microbiology 1a,b,c for credit units)		
2a,b	Ecology and Prevention of Tropical Diseases	1	(2)

	MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		SATURDAY	
	MATERNAL & CHILD HEALTH 1 b**	IND. HYG. 6 a, b	INTERDEPT. COURSE 40 a, b, c BIO.- EPID. * * *	MICRO.- T. P. H. 1 a, b, c * *	MICRO.-T. P. H. 1 a, b, c * *	ENV. HYG. 5 a, b BIOSTAT. 15 a, b EPID. 15 a, b MICRO. 15 a, b P. H. P. 15 a, b T. P. H. 2 a, b	INTERDEPT. COURSE 40 a, b, c BIO.- EPID. * * *	EPID. 1 a, b*	MATERNAL & CHILD HEALTH 1 b**	IND. HYG. 6 a, b	INTER- DEPT. COURSE 40 a, b, c BIO.- EPID. * * *	MICRO.- T. P. H. 1 a, b * *
9												
10												
11												
12												
1												
2												
3												
4												
5												

* REQUIRED OF M.P.H.

CANDIDATES

** SEMI-SELECTIVE COURSES
FOR M.P.H. CANDIDATES **** REQUIRED OF S.M. HYG.
CANDIDATES

3	BIOSTATISTICS 1 a, b*	IND. HYG. 2 a, b LAB.	P. H. P. PRAC. 3 b DEV. OF PERS.	INTER- DEPT. COURSE 3 b HISTORY	ENV. HYG. 2 a, b RAD. HYG.	M. C. H. 15 a, b	IND. HYG. 2 a, b LAB.	EPID. 3 b LECT. & CLINIC	P. H. P. 4 b, c CHRON. DIS.	MICRO- BIOLOGY TROPICAL PUBLIC HEALTH LAB. 1 a, b, c**	IND. HYG. 6 a, b
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SPRING TERM — THIRD PERIOD (February 12 to March 31, 1962)

INTERDEPARTMENTAL COURSE		Credit Units		Credit Units
4c,d	Research Methods in Community Health	2	(4) †	MICROBIOLOGY
	Biostatistics and Epidem.***	2	(7)	
	Epidemiology of Non-Infectious Disease**	1	(3)	
ENVIRONMENTAL HYGIENE				
1c	Environmental Hygiene**	2.5		1a,b,c Ecology and Epidemiology of Infectious Diseases**
2c,d	Radiological Hygiene	1.5	(3)	11c Public Health Lab. Proc.
3c,d	Occupational Medical Clinics	.5	(1)	15c,d Seminars in Microbiology
4c,d	Occupational Medical Clinics	.5	(1)	NUTRITION
5c,d	Aviation Health and Safety	1	(2)	
6c,d	Human Factors in Occupational Adjustment and Safety	1	(2)	2c,d Advanced Topics
				3c,d Laboratory Techniques
BIostatISTICS				PHYSIOLOGY
2c,d	Statistical Methods	2	(4)	
15c,d	Special Seminar	1	(2)	2c Environmental Physiology
EPIDEMIOLOGY				40c,40d Toxicology and Radiation Biology
4c,d	Human Heredity	1	(2)	PUBLIC HEALTH PRACTICE
15c,d	Departmental Seminars	1	(2)	
INDUSTRIAL HYGIENE	Basic Problems in Occupational Health	3.5	(7)	
		2	(4)	
7c,d	Aerosol Technology			2c,d Organization and Administration of Medical Care
MATERNAL AND CHILD HEALTH				4b,c Control of Chronic Disease
2c,d	Problems and Programs in Maternal and Child Health	2	(4)	5c,d Health Education
				6c,d Group Dynamics
				7c Principles of Supervision and Consultation
				9c,d Control of Mental Disorders
				10c,d Advanced Public Health Practice
				11c,d Health and Illness in Cross-Cultural Perspective
				15c,d Special Seminars
				TROPICAL PUBLIC HEALTH
				1a,b,c Ecology and Epidemiology of Infectious Diseases** (see listing under Microbiology)
				7c Laboratory Techniques

Unscheduled courses: Interdept. Course 42c,d; Biostat. 17c,d; Epidem. 17c,d; Ind. Hyg. 8c,d; Mat. and Child Health 3c,d, 17b,c,d; Microb. 12c, 17c,d; Nutrition 17c,d; Physiology 17c,d; P.H.P. 13c,d; 17c,d, 41c,d; T.P.H. 5c,d, 17c,d, 42c,d.

*** Semi-elective courses for M.P.H. candidates *** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

SPRING TERM — THIRD PERIOD

February 12, 1962 to March 31, 1962

9	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
10	ENVIRONMENTAL HYGIENE 1 c**	INTERDEPT. COURSE 40 a, b, c BIO.-EPID. * * *	MICRO.- T. P. H. 1 a, b, c * *	INTERDEPT. COURSE 40 a, b, c BIO.-EPID. * * *	ENV. HYG. 6 c, d HUM. FACT.	ENV. HYG. 6 c, d HUM. FACT.
11			ENV. HYG. 5 c, d BIOSAT. 15 c, d EPID. 15 c, d MICRO. 15 c, d NUTR. 2 c, d P. H. P. 15 c, d	INTERDEPT. COURSE 40 a, b, c BIO.-EPID. * * *	ENV. HYG. 6 c, d HUM. FACT.	ENV. HYG. 6 c, d HUM. FACT.
12	INTER- DEPT. COURSE 4 c, d RES. METH.	ENV. HYG. 1 c**	ENV. HYG. 5 c, d BIOSAT. 15 c, d EPID. 15 c, d MICRO. 15 c, d NUTR. 2 c, d P. H. P. 15 c, d	ENV. HYG. 1 c**	ENV. HYG. 6 c, d HUM. FACT.	ENV. HYG. 6 c, d HUM. FACT.
1						
2						
3	P.H.P. 10c,d	MICRO. 11 c LAB. RAD. PROC. HYG.	ENV. HYG. 2 c, d	ENV. HYG. 1 c**	ENV. HYG. 6 c, d HUM. FACT.	ENV. HYG. 6 c, d HUM. FACT.
4						
5	P.H.P. 11c,d	M.C.H. 2c,d				
6						

** SEMI-SELECTIVE COURSES
FOR M.P.H. CANDIDATES
*** REQUIRED OF SM. HYG.
CANDIDATES

SPRING TERM — FOURTH PERIOD (April 9 to June 2, 1962)

INTERDEPARTMENTAL COURSE		<i>Credit Units</i>	
		<i>Microbiology</i>	<i>Credit Units</i>
4c,d	Research Methods in Community Health	13d Rickettsial and Viral Diseases	3
41c,d	Epidemiology of Non-Infectious Disease **	15c,d Seminars in Microbiology	1 (2)
ENVIRONMENTAL HYGIENE			
2c,d	Radiological Hygiene	2c,d Advanced Topics	1 (3)
3c,d	Occupational Medical Clinics	3c,d Laboratory Techniques	1 (2)
4c,d	Occupational Medical Clinics	4d Clinical and Path. Aspects of Nutritional Disease	1
5c,d	Aviation Health and Safety	5d Nutritional Surveys	1
6c,d	Human Factors in Occupational Adjustment and Safety	PHYSIOLOGY	
7d	Occupational Medicine	3d Toxicology of Air Contaminants	1
8d	Community Air Pollution	40c,40d Toxicology and Radiation Biology	1.5 (3)
BIOSTATISTICS			
2c,d	Statistical Methods	PUBLIC HEALTH PRACTICE	
15c,d	Special Seminar	2c,d Organization and Administration of Medical Care	1 (2)
EPIDEMIOLOGY			
4c,d	Human Heredity	5c,d Health Education	1 (2)
5d	Epidemiologic Problems in Infectious Disease	6c,d Group Dynamics	1 (2)
15c,d	Departmental Seminars	9c,d Control of Mental Disorders	1 (2)
INDUSTRIAL HYGIENE			
1c,d	Basic Problems in Occupational Health	10c,d Advanced Public Health Practice	2 (4)
7c,d	Aerosol Technology	11c,d Health and Illness in Cross-Cultural Perspective	1 (2)
MATERNAL AND CHILD HEALTH			
2c,d	Problems and Programs in Maternal and Child Health	15c,d Special Seminars	1-2 (2-4)
UNSCHEDULED COURSES:			
Interdept. Course 42c,d; Biostat. 17c,d; Epidemiology 17c,d; Ind. Hyg. 8c,d; M.C.H. 3c,d, 17b,c,d; Microb. 17c,d; Nutrition 17c,d; Physiol. 17c,d, 41d; P.H.P. 13c,d, 17c,d, 41c,d; T.P.H. 5c,d, 17c,d, 41d, 42c,d.			
* Required of M.P.H. candidates. ** Semi-elective courses for M.P.H. candidates.			
† Figures in parentheses are units for entire course, if this runs longer than one period.			

	TUESDAY			WEDNESDAY		THURSDAY		FRIDAY		SATURDAY
	MONDAY	ENV. HYG. 7 d	ENV. HYG. 2 c, d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 6 c, d	ENV. HYG. 2 c, d	
9	INTERDEPARTMENTAL COURSE 41 c, d** NON-INFECTIOUS DISEASE	ENV. HYG. 7 d	ENV. HYG. 2 c, d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 6 c, d	ENV. HYG. 2 c, d	SANITARY ENGINEERING 1 d*
10		ENV. HYG. 7 d	ENV. HYG. 2 c, d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 6 c, d	ENV. HYG. 2 c, d	
11		ENV. HYG. 7 d	ENV. HYG. 2 c, d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 6 c, d	ENV. HYG. 2 c, d	
12	INTER-DEPT. COURSE 4 c, d RES. METH.	SANITARY ENGINEERING 1 d*			ENV. HYG. 5 c, d	SANITARY ENGINEERING 1 d*		IND. HYG. 1 c, d	INTER-DEPT. COURSE 4 c, d RES. METH.	
1		ENV. HYG. 7 d	ENV. HYG. 2 c, d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 5 d	ENV. HYG. 7 d	ENV. HYG. 6 c, d	ENV. HYG. 2 c, d	
2		PHYS. 3 d		PHYS. 40 c, 40 d	IND. HYG. 1 c, d	PHYS. 40 c, 40 d	PHYS. 40 c, 40 d	PHYS. 3 d	PHYS. 40 c, 40 d	* REQUIRED OF M.P.H. CANDIDATES
3	P.H.P. 10 c, d				IND. HYG. 1 c, d			EPID. 4 c, d	MICRO. 13 d RICK. DIS.	** SEMI-ELECTIVE COURSE FOR M.P.H. CANDIDATES
4					IND. HYG. 1 c, d			EPID. 4 c, d	MICRO. 13 d RICK. DIS.	
5	P.H.P. 11 c, d				IND. HYG. 1 c, d			EPID. 4 c, d	MICRO. 13 d RICK. DIS.	
6					IND. HYG. 1 c, d			EPID. 4 c, d	MICRO. 13 d RICK. DIS.	

KEY TO AERIAL VIEW

- I School of Public Health, 55 Shattuck Street
 - Administration, Departments of Biostatistics, Industrial Hygiene, Maternal and Child Health, Physiology and Public Health Practice
- II School of Public Health, Huntington Building, 1 Shattuck Street, Departments of Epidemiology, Nutrition and Microbiology
- III International House, School of Public Health
 - A Administration Building, Medical School Second Floor, Library
 - B, C, D, E Laboratories and Classrooms, Medical School Building E2, Room 238, Department of Tropical Public Health
 - F Vanderbilt Hall
- IV Peter Bent Brigham Hospital
- V Children's Medical Center
- VI Boston Lying-in Hospital
- VII Beth Israel Hospital





